BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 10 1938

PHYSIOLOGY OF THE VOCAL MECHANISM *

BY

DOUGLAS GUTHRIE, M.D., F.R.C.S.Ed.

Surgeon, Edinburgh Ear and Throat Infirmary; Consulting Aural Surgeon, Royal Hospital for Sick Children, Edinburgh

The problems connected with the mechanism of voice form an interesting study which has hitherto received comparatively little attention from the laryngologist. He tends to rely upon one method of examination—that of inspection, forgetting that the larynx, like other organs, has a function which deserves investigation. The laryngoscope has become almost a fetish, and consequently in this respect laryngology has not kept pace with the sister science of otology, in which the functional examination of hearing is acknowledged to be as essential as inspection of the tympanic membrane. Surely voice production is as important as voice perception.

A Neglected Branch of Laryngology

There are other reasons for this neglect of the study of vocalization. The subject may be approached from so many angles that it is difficult to obtain a comprehensive and unbiased survey. Anatomy, physiology, phonetics, physics, music, psychology are only a few of the sciences involved in a study of voice.

Naturally enough, the literature of the subject is widely scattered. It is not easy to find a synopsis of present-day knowledge of the mechanics of voice. Paradoxical though it may seem, laryngology is strangely aphonic on vocal matters. In vain does one search the modern standard English and American textbooks of laryngology for information on the vocal mechanism and its disorders.

Before laryngology became so aggressively surgical its practitioners displayed considerable interest in speech and song. Morell Mackenzie, Semon, Lennox Browne, and others paid much attention to the problem, and their papers still deserve attention. To-day, speech and voice are again attracting general notice, and it is surely the duty of the laryngologist to make some further contribution to the subject, or at least to acquire some basic knowledge of the physics and the physiology of vocalization in order that he may render the best service to the patient who depends upon his voice for a livelihood.

The Conflict of Singing and Science

Many textbooks of physiology contain a chapter or section on the human voice, and another source of information is to be found in the writings of singers themselves, and of teachers of singing and of speech. Several small manuals have appeared in this country. But it is not easy to describe an art in terms of science. Some of those books show a lamentable lack of physiological knowledge. The best of them are the result of a collaboration of medical and vocal specialists, each contributing his share. Such co-operation is greatly to be desired, as there has long been an unfortunate conflict between singers and scientists. The singer uses such terms as head voice, tone, register, etc., which mean nothing to the scientist; the scientist, on the other hand, may confuse the singer by concentrating too heavily upon the larynx as the vocal organ, forgetting the equally important factors of respiration and resonance.

Evolution of the Vocal Mechanism

As a unit of the vocal mechanism the larynx is highly evolved, and its performance is truly wonderful. The vocal cords are capable of delicate adjustment by means of numerous muscles, some sixty in number. Even in lowly forms of life one may find sound-producing mechanisms which are the precursors of the highly evolved human larynx.

That supreme vocalist of the insect world, the cicada, so well known in legend and fable, possesses a chitinous plate which is caused to vibrate by the rapid contractions of a powerful muscle, producing a note corresponding to a pitch of 660 cycles per second. The female cicada is dumb; only the male can sing (Baier, 1930).

Certain fishes have a vocal mechanism (Greene, 1924). In the Californian singing fish there is a swim-bladder having two compartments divided by a diaphragm with a small central aperture. On each side of the wall of the air sac is a large muscle controlled by a spinal nerve. Contraction of this muscle forces the air from one chamber to the other, and a sound is thus produced which appears to be purposive. The mechanism resembles that which enables the frog to emit his familiar croak. Birds have a highly specialized vocal organ, the syrinx, with pads at the bronchial bifurcation to act as vocal cords, while the upper larynx is also used in producing song (Haecker, 1898).

I mention these examples merely to show that the human larynx would appear to have a long ancestry so far as its vocal function is concerned.

The Development of Voice

As an introduction to the mechanics of the larynx itself and of the vocal mechanism of which it is but a part, it is necessary to say a few words regarding the development, range, and classification of the voice.

The newborn infant cries on a note approximating to 435 cycles per second, and as growth proceeds the vocal range extends until at the end of the first year it encompasses six half-tones, at the end of four years about an octave, and just before puberty about an octave and a half (Nadoleczny, 1926). A practical deduction from those facts is that the limited range of the child's voice should be more widely recognized by those who compose for children songs which are often ill adapted to their voices.

* The Annual Address delivered at the Central London Throat, Nose and Ear Hospital on October 21, 1938.

Vocal Changes at Puberty

At puberty the male larynx grows rapidly, each vocal cord increasing appreciably in length. The male voice at this stage undergoes the remarkable alteration known as "breaking," which may occupy six months to two years. The change may begin at 8 years of age or may be delayed as late as the eighteenth year.

In boys the vocal pitch falls by one-sixth at its upper limit and by an octave at its lower limit. In girls the change is much less pronounced, is more rapidly completed, and consists merely in a slight extension of the upper and lower limits. Hoarseness is common in boys, and in about 10 per cent. of cases there may be seen a slight redness and swelling of the vocal cords and laryngeal mucosa, which may lead to an erroneous diagnosis of laryngitis.

Various disorders of voice are apt to appear at puberty. For example, there is the persistent falsetto voice which is the result of an incompleted change. In other cases the vocal change is of perverse nature, and this may account for the occasional appearance of the female bass or the male soprano. No vocal change occurs in boys who have undergone early castration, an operation which was at one time largely practised in Italy.

The Classification of Voices

The adult voice is the result of the puberty change, and the voice may be classified, according to its range, as bass, baritone, or tenor in man, and as soprano, mezzo-soprano, and contralto in women. Among the races of Southern Europe there is a tendency to high male voices and low female voices; there the proportion of tenors and contraltos is greater than among Northern races, in which basses and sopranos predominate. Orientals tend to have voices of high pitch, which may account for the falsetto nature of Eastern song.

It is important for the laryngologist to ascertain the nature of his patient's voice, as a common cause of vocal troubles is the adoption of a range or tessitura unsuited to the voice. For example, one may find a baritone who believes that he is a tenor, and who is therefore subjecting his voice to the strain of singing too high a pitch range.

Range of the Human Voice

Taking into consideration all classes of voice, from the deep bass note of the Cossack choir to the shrill pipe of the coloratura soprano, the entire compass of which the human voice is capable may extend over five or even six octaves (Fig. 1). But such extremes are rare, and an individual voice seldom extends over three octaves, while a range of two and a half octaves is more usual.

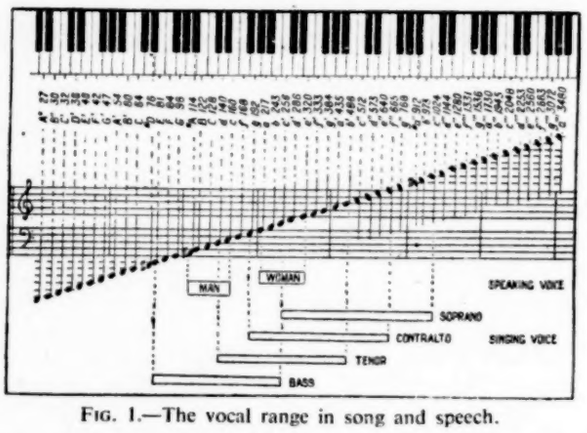


FIG. 1.—The vocal range in song and speech.

In speaking, a range of about an octave is used, and in dramatic speech about two octaves. The average pitch for speech is situated near the lower level of the singing range. In men it is about 140 cycles per second (*d* in music), in women about 243 cycles (musical *b*). The pitch of the speaking voice may be estimated by comparison with the note of the tuning-fork made for the purpose by Edelmann of Munich.

The Three Parts of the Vocal Mechanism

The larynx is only one part of a delicately adjusted combination of organs, all of which possess functions other than that of voice production. It must never be forgotten that the vocal mechanism is a triple alliance of respiration, phonation, and articulation, the last-mentioned being intimately associated with resonance. Treatment applied to the larynx will not remedy faulty breathing or ill-balanced resonance.

No study of vocal function is complete which does not take into account each of the three units which, coupled and adjusted to each other, constitute the vocal mechanism. Before discussing the part played by the larynx in this trilogy, let me say a few words regarding the respiratory and articulatory components of the mechanism.

The Respiratory Mechanism in Vocalization

The vital apparatus of respiration supplies the motive power of the vocal machine. But normal quiet breathing is an involuntary action, and in order to produce voice a prolonged and controlled act of respiration is demanded. The best means of securing this has been a subject of controversy among teachers of singing from the earliest days of song.

The method most widely used is the whole chest or central breathing, or the old Italian method. Briefly stated, this consists in reinforcing and sustaining the upward expiratory movement of the diaphragm by contraction of the muscles of the abdominal wall. To some teachers this is known as "abdominal press."

The relative extent of costal and diaphragmatic movement may be studied by the pneumograph (Fig. 2). The excursions of tambours, connected with closed tubes encircling the thorax and abdomen, are recorded on a revolving drum. The records thus obtained vary considerably. As a rule the prolonged expiration is well shown, the diaphragmatic release occurring slightly in advance of the descent of the ribs and cartilages.

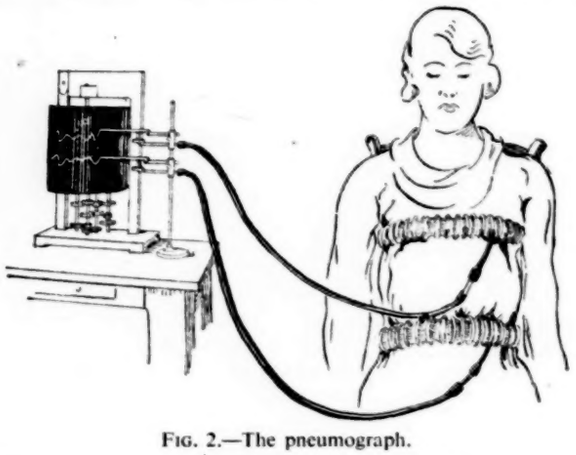


FIG. 2.—The pneumograph.

The Method of "Rib Reserve"

My colleague, Dr. Robert Curry, and I recently took the opportunity of observing a method of breathing which, so far as we are aware, had not been investigated previously.

It consists in the use of the "abdominal press," but with the following modification. The lower part of the thorax is maintained in an expanded position during the entire act of speech. This is known as "rib reserve." The method is taught by various schools of speech and drama, and it is also recommended by certain teachers of singing. The artistic results appear to be satisfactory, and the method seems to demand no great effort from those who have practised the technique until it has become almost a reflex action. A third tambour connected with the upper part of the chest records the movements of this region, as in the accompanying tracing (Fig. 3), and demonstrates that in the upper costal region

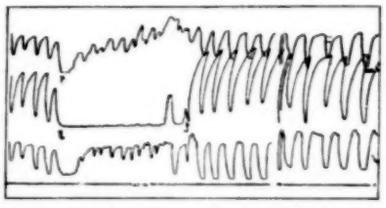


FIG. 3.—The technique of "rib reserve." The tracings, from above downwards, record upper thoracic, lower thoracic, and abdominal movements. Lower thoracic movement is arrested during the act of speech.

movement continues, while it seems to be held in check in the lower costal region.

It was interesting to observe that one of the subjects of our experiment, a trained exponent of the method (trained as a speaker but not as a singer), did not adopt the technique for singing, and when asked to speak a passage immediately after singing, found it difficult to return to the "rib reserve" method, although she was not conscious of any such difficulty (Fig. 4).

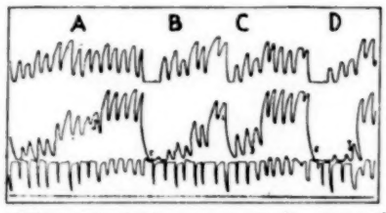


FIG. 4.—Effect of singing upon "rib reserve." Song is recorded at A, speech at B, C, and D. Only in the third act of speech (D) was control of the lower ribs regained.

It appears probable that the elevation of the ribs (and their maintenance in a raised attitude), usually attributed to the intercostal muscles, is partly effected by the serratus magnus muscle. Sir Charles Bell (1836) indicated the importance of this muscle in respiration. It possesses a double nerve supply, from the intercostal nerves and from the long or external thoracic nerve, derived from the fifth and sixth cervical segments. Bell named this nerve the "external respiratory nerve" to distinguish it from the internal respiratory or phrenic nerve.

Our results were confirmed by radiography, but it would take too long to describe them in further detail. Suffice it to say that the breathing mechanism must be studied by the laryngologist who would treat disorders of voice. An incorrect method of breathing is perhaps the chief cause of vocal failure.

The "Resonator" Mechanism

Before discussing the mechanical action of the larynx it is necessary to refer to that most important component of the vocal mechanism which, for want of a better term, is known as the "resonator." Certain writers on the subject of voice go so far as to say that the vocal cords serve merely to regulate air pressure, the actual sound being produced in the paranasal sinuses. The air, blowing across the ostium of each cavity, is said to produce voice. But every laryngologist knows that the ostia are very small, and hidden behind the middle turbinal away from the main air current. Moreover, there is no proof that operative destruction of the walls of the sinuses has any effect on the voice. The strongest argument against the theory is that in song or speech the air does not pass out by the nose, save in the sounds *m*, *n*, and *ng*.

It cannot be denied that such terms as "head voice," "throwing the voice forward," are useful to the singer, but they do not describe what actually happens. The nasal sinuses cannot be regarded as the source of voice, and indeed the nasopharynx and nose cannot even act as "resonators," as the sound does not pass that way. As for the palate, it has been shown that in order to function as a sounding-board it would require to be of great size.

The two resonators are (1) the mouth and (2) the pharynx, and their acoustical features have been studied in great detail by many physicists since the days of Helmholtz. Coupled to the larynx, they act as a sort of loud-speaker horn; without the resonators the laryngeal note is

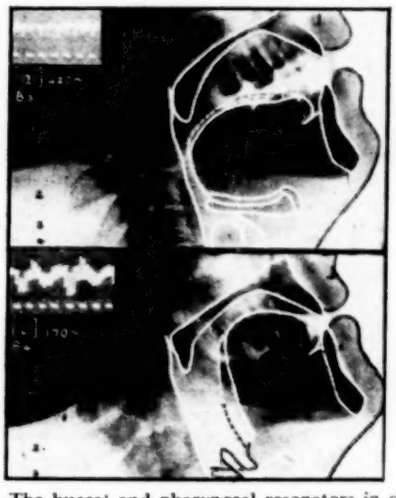


FIG. 5.—The buccal and pharyngeal resonators in singing the vowel *a* at 420 cycles and the vowel *i* at 170 cycles. Oscillograph record in corner. Note that in each case the nasopharynx is closed by the velum palati; also the great difference in conformation of the cavities on comparing the two films.

weak and indefinite. Brünings observed a case of attempted suicide in which the pharynx had been cut open, the great vessels escaping. When the patient spoke as the wound was held open he made only a weak bleating sound, but when it was closed and stitched he could produce normal speech.

The classical experiments of Müller on the excised larynx, made over 100 years ago, showed the importance of the co-operation of larynx and resonator, and quite recently Husson (1933) has indicated that various vocal defects may arise from imperfect adaptation of the resonators to the larynx. This also explains why the blowing of wind instruments has a deleterious effect on the larynx of the player. Few of those who play wind instruments have good voices, and many of them suffer from recurrent laryngitis.

The wide variations of the size and shape of the pharyngeal resonator are illustrated in the accompanying

x-ray film from Dr. Curry's work (1937), showing the comparison between the shape and size assumed in singing the vowel *a* at a pitch of 420 cycles and that for the vowel *i* at 170 cycles (Fig. 5).

The Problem of "Registers"

The term "register" has led to so much confusion that a definition is necessary. Garcia (1855) stated that a register was a consecutive series of vocal notes which the trained ear could distinguish from another series of notes, and that the quality of the voice changed in passing from one series to another. One of the problems which confront the singer is the elimination of any obvious change in passing from one register to another and the avoidance of a break in effecting the change, which is really a change of mechanism. The position of the larynx alters, as also do the tension and form of the cords. The latter change has given rise to the unfortunate terms "thick" and "thin" register. In the chest register the cords are thick, of weak tension, and the amplitude of vibration is large; in the so-called head register the cords are thin, strongly tensed, and have a small amplitude of vibration.

Three registers are usually distinguished, known as chest, middle, and head registers. The terms are in no case anatomical; they denote the sensations of the singer. He feels the notes of low pitch in his chest and those of high pitch in his head, but that does not mean that they are formed in these parts. It is purely a subjective sensation. By some authorities the head register ("Fistelstimme") has been termed falsetto, and this has led to some confusion. There is still another register for very high notes, known as the whistle register, produced only by some soprano voices. The whistle originates in a small elliptical gap in the anterior third of the glottis.

Mechanics of the Larynx

Let us now briefly consider the mechanics of the larynx itself in relation to voice. Certain adaptations of the pharynx and larynx are necessary in order to produce notes of various pitches, and those modifications are effected not only by the constrictors and other pharyngeal muscles but also by muscles causing (*a*) movement of the larynx as a whole and (*b*) movement of the laryngeal cartilages upon each other.

MOVEMENTS OF THE ENTIRE LARYNX

The act of inspiration exercises a downward pull upon the trachea and larynx, the normal tracheal tug. In expiration this pull is relaxed and the pharyngeal resonator is enlarged. This is obviously a passive movement.

The larynx is capable of movement to the extent of several centimetres in a vertical plane. It may be elevated by contraction of the thyrohyoid muscle and of those muscles which raise the hyoid bone (digastric, stylohyoid, etc.), and it may be lowered by the sternothyroid and omohyoid muscles. The downward movement is accompanied by a forward movement, and the pharynx is thus enlarged in a horizontal as well as in a vertical direction.

In the untrained singer the larynx rises as the pitch rises, and vice versa; in the trained singer this movement is reversed, and the larynx may actually descend as the pitch rises.

The descent of the larynx is intimately connected with the manœuvre known to singers as "covering," which gives a more pleasing tone at certain pitches, owing to an increase of overtones. The downward movement of the larynx (a movement such as occurs in the initial stages of a yawn) occurs at a lower pitch in the closed vowels; that is, first on *o* and *u*, then *e* and *i*, and finally on *a*. In other words, the larynx is lower in singing *u* than in singing *e*. As a rule the better trained the singer the less does the entire larynx move.

MOVEMENTS OF THE LARYNGEAL CARTILAGES

It is needless to describe to laryngologists the well-known action of the various laryngeal muscles, which act upon the cricothyroid and crico-arytenoid joints. The crico-arytenoid joint, with its curiously shaped articular surfaces, is capable of rotatory or sliding action, the latter being often forgotten in textbook descriptions.

Certain of the muscular actions do not concern joints. For example, the inferior constrictor of the pharynx, bestriding the wings of the thyroid cartilage, may by its contraction narrow the thyroid angle and thus assist to close the glottis. Further, the thyro-arytenoid, most important of all the laryngeal muscles, is to be regarded as an integral part of the vocal cord itself, as it can alter the form, the bulk, and the consistency of the vibrating cord, and so modify the pitch of the note. But obviously it cannot act alone. It is intimately associated with the cricothyroid muscle or external tensor.

The two synergic muscles are shown in the accompanying engraving from Müller's *Physiology*, published in 1832 (Fig. 6).

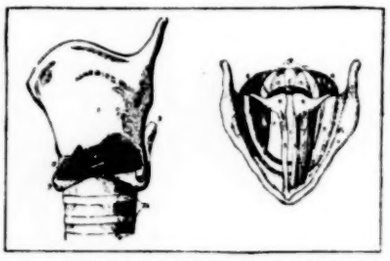


FIG. 6.—The cricothyroid and thyro-arytenoid muscles, so-called external and internal tensors of the vocal cords.

The cricothyroid muscle approximates the two cartilages by pulling the cricoid upwards, and thus the cords are tensed. It also assists to close the glottis, but only with the assistance of the posterior crico-arytenoid and interarytenoid muscles. The glottis can be closed only if a side-slipping of the arytenoid is prevented by the arytenoid muscle and if the arytenoid is braced back by the posterior crico-arytenoid muscle.

The lateral crico-arytenoid muscle can act either as an abductor or an adductor, depending upon which of the other muscles are in action and upon whether it causes the arytenoid to rotate or to slide. In using the words "tensor" and "tension" as applied to the vocal cords it must be distinctly understood that no idea of stretching is implied. The cords alter very slightly in length if at all during phonation.

The most important fact to remember regarding the muscles of the larynx is that, while they are grouped and paired, each pair does not act as an isolated unit, but always in conjunction with other laryngeal muscles.

Vibratory Movement of the Vocal Cords

The laryngeal muscles do not produce the vocal note. Phonation is an aerodynamic, not a muscular, phenomenon. The muscles merely adjust and hold the cords in a certain position, at a certain tension, and with a certain shape, and the expiratory air current from the lungs does the rest.

Many vague and ill-considered opinions have been expressed on the all-important question of vocal cord vibration. All sorts of curious theories have been advanced. One school of observers affirmed that sound was produced by the "cyclonic" air currents within the laryngeal ventricles. Others stated that the cords vibrated in a vertical plane. Although our knowledge is still far from complete it is easy to refute such obsolete notions. We now know, for example, that

vocal cord vibration is mainly transverse, and only to a very slight extent vertical.

From time to time the larynx has been compared to various types of musical instrument. It can in no wise be likened to a stringed instrument, as alterations of pitch do not depend upon changes in the length of the cords. To some extent the larynx resembles a reed or a siren, but the resemblance is not very accurate. What actually happens is that the vocal cords forming the glottic margins are approximated and hardened by muscular action; then, by the increasing pressure of air from the lungs, the glottis is opened and some air escapes. By reason of the elasticity of its margin the glottis again closes, and by the rapid succession of these movements of opening and closing a note is produced, the pitch of which depends upon the number of glottic movements a second. The simile of the siren holds good in that the sound is the result of a rapid series of puffs of air. But the number of movements a second depends, in the larynx, upon the rigidity, thickness, and tension of the vocal cord rather than upon the air pressure. The mechanism for altering the vibrating mass such as one finds in the larynx is not present in any musical instrument. Sir Richard Paget has aptly compared the vocal cords to the lips of a trumpeter.

Working Models of the Larynx

Ewald (1913) constructed a number of models to illustrate the mechanics of the larynx which are probably as accurate as any model can be. The accompanying diagram (Fig. 7) illustrates the principle. The elastic edges

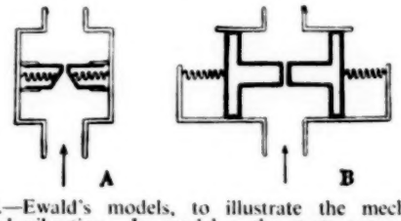


FIG. 7.—Ewald's models, to illustrate the mechanism of vocal cord vibration. In model A the parts representing the cords may be caused to vibrate by a blast of air from below. In model B vibration may also be caused by a downward blast.

are set in motion by the upward air current, but in the second model a note may be produced on inspiration as well as expiration. We know that this occurs in the human larynx in humming, crying, laughing, etc., and even during speech the inspiratory voice is used by children and very talkative persons, while certain animals, such as the cat and donkey, can phonate on inspiration.

Perhaps the most accurate model is that which Harless (1853) constructed from two parallel strips of fresh frog's muscle, stretched across the linear opening of a tube so that they might be set in vibration by a blast of air. When the muscles were electrically stimulated to contract the pitch of the note was raised. The experiment has been repeated by Ewald and more recently by Negus, and it illustrates very well the mechanism of the larynx. The pitch of the note is raised by increased tension of the cords, the loudness by increase of air pressure.

It is generally taught that during phonation the arytenoid cartilages are firmly opposed, the cords alone vibrating. In view of investigations by Némai (1916) and of the cinematograph record of Pressman it would appear that this is not so. In the production of low notes the arytenoid edges vibrate along with the cords. Like the laryngoscope, cinematography at the rate of sixteen images per second can only give a picture of the major phase, although an ultra-rapid technique, giving several thousands of pictures per second, has recently been tried, and would appear to be an ideal means of investigation, though naturally very expensive.

The exact mechanism of vocal cord vibration is best studied by the stroboscope.

The Principle of the Stroboscope

The principle of the stroboscope was applied to the larynx for the first time by Töpler in 1866. Since then it has been used by numerous workers, and their results form a large bibliography, although in this country stroboscopy has not received the attention it deserves. Even those who have had experience of the method are not agreed as to its usefulness. While some regard the stroboscope as merely an interesting toy, others call it the microscope of the larynx, and regard it as the best means of demonstrating the finer movements. As usual, the truth lies between the two extremes.

Stroboscopy consists in the inspection of the larynx by a periodically interrupted beam of light, the number of interruptions per second coinciding or nearly coinciding with the number of vibrations of the vocal cords. A blast of air passing through the slots in the revolving disk gives (after the manner of a siren) a note of a pitch corresponding in frequency to the number of interruptions of the light, and the subject is asked to imitate this note. If, for example, he emits a note of a pitch corresponding to 128 double vibrations per second while the larynx is viewed by a beam of light interrupted 128 times per second the vocal cords appear to be immobile. Then, if the revolving disk is very slightly retarded so that the light is interrupted, say, 127 times per second, the cords are seen to move at the rate of one vibration per second; in other words, the observer views the vocal cords in "slow motion," each interruption contributing a small fraction (1/127) of the composite view presented each second. But if the number of light interruptions be slowed down considerably, say to 115 per second, the laryngeal note remaining at 128 cycles, one will no longer see each individual vibration. The less the variation between the interruptions of the light and the vibration of the cords, the more clearly is the movement of the cords demonstrated. By varying the speed of the disk and the pitch of the note produced one may analyse the vibratory movement of the vocal cords.

A stroboscope has been recently introduced in which the source of light is a neon lamp which may be directly controlled by the voice pitch transmitted by a microphone connected to the lamp.

Results of Stroboscopic Examination

It cannot be denied that the stroboscope has added to our knowledge of the physiology of the larynx. By its aid one may study the closure of the glottis, the amplitude of the vibration, the direction of movement, and the form of the cords at the various pitches which the voice may produce.

By means of the stroboscope one may clearly distinguish between a paralysed vocal cord and a cord which is fixed by crico-arytenoid ankylosis. One may diagnose a paresis of the adductor muscles which escapes notice in the ordinary laryngoscopic view. One may note incoordination on various pitches (islands of defective phonation); one may discover a difference in the rates of vibration of the two cords (a phenomenon not yet fully elucidated); and one may study abnormal mechanisms such as ventricular band voice.

Vibratory movement in the vertical plane is characteristic of a paralysed cord, the normal movement being horizontal. The duration of contact of the cords varies

according to the pitch. In 1832 Lehfeldt suggested that there were two vocal cord mechanisms—the normal and the falsetto—and he stated that in the high note of the so-called falsetto register the glottis remained open while the edges of the cords vibrated. Müller confirmed this view, and at a later date Katzenstein (1909) sought to prove that the thyro-arytenoid was the active muscle in the lower register, while in falsetto the cricothyroid took over the work of maintaining the tension of the cords.

Quite recently Tarneaud (Husson and Tarneaud, 1932), using the stroboscope, observed that in the falsetto register the cords did actually make contact, but that the duration of such contact occupied so small a part of the cycle that it escaped notice under ordinary laryngoscopy. Tarneaud's diagram, here reproduced (Fig. 8), illustrates how, in

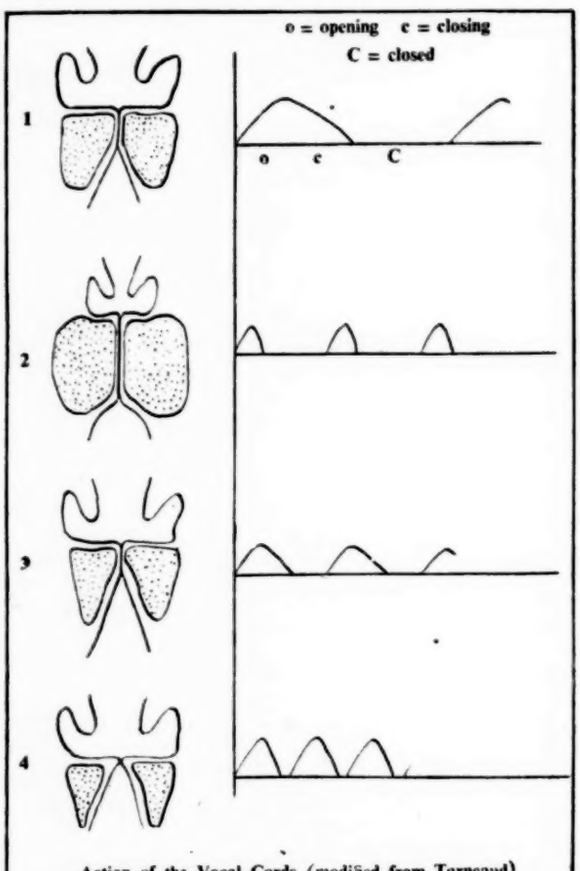


FIG. 8.—Tarneaud's diagram showing the open and closed phases of vocal cord vibration as revealed by the stroboscope. On the left are sections of the vibrating mass (thyro-arytenoid muscle) during the closed phase from a low-pitched note at 1 to a high note at 4; at 1 and 2 the thyro-arytenoid muscle is contracted; at 3 and 4 the cord mass is smaller and tension is maintained by the cricothyroid muscle.

The diagram on the right shows how the closed phase predominates at 2, and on laryngoscopic examination the cords appear to meet. At 4 the open phase predominates and the cords appear to remain apart. The real extent of movement can be determined only by stroboscopy.

singing up the scale, the open and closed phases of the vibration vary in duration, and how, in falsetto, the closed phase is very brief in comparison with the time occupied by opening and closing of the glottic aperture. It is generally agreed, however, that in the highest notes of the whistle register there does remain a small opening near the anterior part of the glottis during the entire vibration, and this note is produced only by the rush of air through the hole.

Pressman's film (1938), which was shown this year at the Royal Society of Medicine, while of course it did not analyse each vibration as does the stroboscope, showed clearly that on the low notes the posterior part of the glottis, including the arytenoid margins, is vibrating, on the middle notes the edges of the entire cords vibrate, and on the high notes the anterior part of the cords vibrates. The film also shows how the cords were kept moist by a continuous flow of mucus from the laryngeal ventricle, this being probably one of the chief functions of the ventricle. The ventricle also enables the ventricular bands to act as an outlet valve, preventing the escape of air and thus ensuring fixation of the thorax during movements of the upper limbs. This function was first described by Professor John Wyllie (1866) of Edinburgh seventy years ago.

Treatment of Voice Disorders

The physiological facts which I have so roughly outlined are of no mere academic importance. They form an essential background to the diagnosis and treatment of voice disorders. Just as orthopaedics has budded from general surgery, so may orthophonics become a useful branch of laryngology. The laryngologist is often consulted by the singer or speaker who complains that the voice is weaker than usual or becomes easily fatigued or is apt to "crack" at certain pitches. There may be symptoms of local irritation or soreness, of constant clearing of the throat or recurrent hoarseness. On examination one may find the dilated vessels and lymphoid nodules which are sometimes described as the signs of "clergyman's sore throat" but which, if pathological at all, are the result rather than the cause of the trouble. The tonsils may be present and the nasal septum may be deflected, but as a rule some previously consulted colleague has dealt with those structures. Most often local examination reveals no abnormality, and the laryngologist is content with the diagnosis of a "functional disorder" and sends the patient to a singing teacher or to a speech therapist. Such a diagnosis is correct: it is indeed a functional disorder—phonasthenia, if we choose to name it so—and the treatment also is sound, as a good speech therapist knows how to deal with the case. But one ought to go further and endeavour to ascertain what part of the vocal mechanism is at fault. Is it the method of breathing? Is it the vocal range? Did the trouble originate from overstrain of the voice or from use of the voice in the course of a cold or after an illness? The laryngologist must not regard his patient as a larynx surrounded by a body, and he must even inquire into the environment of the body with a view to discovering any feature which has an influence upon the voice. The prescription of a spray is not enough, though it may be of great psychological value. Orthophonic treatment must be directed towards the correction of disordered function, and must necessarily be on a physical basis.

Conclusion

And so I conclude this address as I began it, with a plea for a closer study of the problems of speech and of voice, and for a fuller recognition that the vocal mechanism—using the term in the widest sense—still offers a great field of study for the laryngologist. One often hears it said that laryngology is a narrow specialty and that it must needs constantly invade other anatomical territory. What more interesting research could be found than that which concerns vocal function? In pursuing such a study the

laryngologist is in the very centre of his own domain, but even here there is a territory which has too long been left unexplored.

I desire to record my indebtedness to the superintendent, Royal College of Physicians Laboratory, and to Professor Drever, Department of Psychology, University of Edinburgh, for their kindness in providing facilities for histological and experimental work.

REFERENCES

Baier, L. J. (1930). *Zool. Jahrb.*, **47**, 151.
Bell, Sir Chas. (1836). *The Nervous System of the Human Body*, London.
Curry, R. (1937). *J. Physiol.*, **91**, 254.
Ewald, J. R. (1913). *Pflügers Arch.*, **152**, 171.
Garcia, M. (1855). *Proc. roy. Soc.*, **7**, 399.
Greene, C. W. (1924). *Amer. J. Physiol.*, **70**, 496.
Haecker, V. (1898). *Anat. Anz.*, **14**, 521.
Harless, J. (1853). Wagner's *Physiologie*, **4**, 598.
Husson, R. (1933). *Rev. de Phoniat.*, **1**, 106.
—— and Tarneaud, J. (1932). *Rev. Laryng.*, Paris, **53**, 961.
Katzenstein, J. (1909). *Beitr. Anat., usw. Ohr.*, **3**, 291.
Nadoleczny, M. (1926). *Lehrbuch d. Sprach und Stimmheilkunde*, Leipzig.
Némai, J. (1916). *Arch. f. Laryng.*, **30**, 347.
Pressman, J. (1938). *Proc. roy. Soc. Med.*, **31**, 1179.
Wyllie, J. (1866). *Edinb. med. J.*, **12**, 214.

VI AGGLUTINATION IN THE DIAGNOSIS OF TYPHOID FEVER AND THE TYPHOID CARRIER CONDITION

BY

S. S. BHATNAGAR, M.D.Laus., Ph.D., M.R.C.P.,
Major I.M.S.

Deputy Assistant Director of Pathology, Deccan District, and Officer in Charge, Deccan District Laboratory, Trimulgherry, India

Our conception of the diagnostic significance of a Widal reaction has materially altered since it became known that the typhoid–paratyphoid group of organisms are possessed of more than one antigenic component—notably the flagellar H antigens and the somatic O antigens, which produce their serum counterparts on human infection. Since the great war a complicating factor in the serological diagnosis of the enteric group of fevers has been introduced by the widespread use of T.A.B. inoculation.

The relative importance of the two types of antibody (O and H) in the diagnosis of typhoid fever, and of other enteric infections, in the inoculated and the uninoculated individual, first demonstrated by Felix (1924), has been the subject of a large number of studies, the literature being fully summarized by Topley and Wilson (1936). As a result it is being realized that in the interpretation of serological tests such diverse factors as the natural level of O and H agglutinins, the state of the subject in relation to previous inoculation, the agglutinin curves, the individual titres of the antibodies, and the possibility of non-specific stimulation of antibody formation, have to be taken into consideration.

In the laboratories of the Army in India Widal reactions are carried out as a routine every fourth day throughout the course of a continued fever, against standard O and H suspensions supplied by a central enteric laboratory at Kasauli. From personal experience and from a study of the carefully kept records of cases of typhoid fever for the past five years, it was observed that in a typhoid infection in the inoculated the trouble taken in estimating the O and the H agglutinins could not be justified when the value of the results obtained was assessed. In a large majority of cases the rise in the titre of these agglutinins offered no tangible evidence from which alone a positive diagnosis could be arrived at. Reliance had therefore to be placed on the isolation of the infecting organism from the blood, the urine, or the faeces. Where this failed, one was commonly confronted with a positive clinical picture and doubtful serological findings. The results proved to be so disappointing that the practice of carrying out tests for the detection of H agglutinins has recently been entirely discontinued in the Army in India.

It is now generally recognized that, apart from the O and the H antigen, the great majority of strains of *Bact. typhosum* possess a third antigen—the Vi antigen—described and designated as such by Felix and his co-workers. A number of strains alleged to be free from Vi antigen were collected by us and grown on a medium consisting of mutton digest agar (2 per cent.) to which 1 per cent. saccharose was added. They all showed the presence of this antigen and gave rise to Vi antibody on animal inoculation.

Serological analysis of sera over the past three years from patients suspected to be suffering from typhoid fever suggested the possibility that Vi agglutination may prove to be a more reliable method of serological diagnosis of typhoid infection than the time-honoured O and H types of agglutination. This view was further strengthened by the observation that in the examination of thousands of sera from both inoculated and uninoculated persons no Vi antibody could be detected. The explanation why this antibody is not produced in spite of the inclusion of a Vi-containing typhoid strain in a T.A.B. vaccine has already been given (Felix and Bhatnagar, 1935; Bhatnagar *et al.*, 1937). Thus no interference was anticipated in the interpretation of serological tests from Vi antibody which could be accounted for either as a natural or as an inoculation agglutinin.

The present communication deals with the demonstration of Vi antibody in 134 cases of bacteriologically proved typhoid fever. The material was collected from both the inoculated and the uninoculated. In addition, information obtained on the bearing of Vi agglutination on the typhoid carrier condition is included.

Detection of Vi Antigen in a Typhoid Organism and of Vi Antibody in a Serum

When an organism with the morphology and the biochemical reactions of *Bact. typhosum* is found to agglutinate with a typhoid O serum much below the established titre of the serum the presence of Vi antigen in the culture is to be suspected. This is confirmed if it gives a positive reaction in agglutination with a pure Vi serum —that is, a serum prepared against a highly virulent strain of *Bact. typhosum* and from which the O and the H antibodies have been completely removed by absorption.

While the detection of Vi antigen can thus be carried out comparatively easily, the titration of Vi antibody in a serum, on the other hand, is complicated by the simultaneous presence in it of O and H agglutinins. Two methods are usually employed to overcome this difficulty: (*a*) Complete absorption of O and H antibodies from the serum by the use of a strain devoid of Vi antigen. In our experience very few strains indeed are completely devoid of Vi antigen; moreover, this method is a laborious process, hardly of practical applicability to an investigation which involves the serological analysis of a large number of samples. (*b*) Agglutination against selected strains or their chemically treated suspensions sensitive to one type of antibody only. While alcoholized

and formalized suspensions have proved to be excellent reagents for the titration of the O and the H agglutinins respectively, the real difficulty met with in the routine practice of Vi agglutination has been the want of a strain which either in the live state or as a preserved suspension would react only with the Vi antibody. In the course of the antigenic analysis of 235 typhoid strains, collected from different parts of the world, we were able to identify one culture which in its agglutinating reactions behaved as a pure Vi variant of *Bact. typhosum*. This strain has been designated "Vi I" and is described elsewhere (Bhatnagar *et al.*, 1938). Its agglutination reactions with pure O, H, and Vi sera are exemplified in Table I. This strain is not only insensitive to O and H agglutinins but is also more sensitive to Vi antibody than the well-recognized typhoid strains hitherto employed for the purpose of Vi agglutination—namely, "Ty 2," "Watson," and "6 S."

TABLE I.—*Agglutination Reactions of Strain "Vi I" of Bact. typhosum*

	Serum Dilutions	Typhoid Sera		
		Pure H Serum	Pure O Serum	Pure Vi Serum
Strain "Vi I"	1 : 10	–	–	+ + +
	1 : 25	–	–	+ + +
	1 : 50	–	–	+ + +
	1 : 100	–	–	+ + ±
	1 : 200	–	–	+ +
	1 : 500	–	–	+ ±
	1 : 1,000	–	–	+

Vi Antibody in the Blood Serum of Typhoid Patients

The 134 cases of typhoid fever described here consist of fifty-six inoculated and seventy-eight uninoculated individuals. The serum from each case was collected every fourth day and titrated for the presence of the three types of antibody (O, H, and Vi). Table II summarizes the highest titres obtained during the course of typhoid infection; the "titre" represents the dilution of the serum which gives a *one plus* (+) reading according to the agglutination technique of Felix. The O and H agglutinin titres are omitted, as they are intended to form part of a subsequent communication.

TABLE II.—*Vi Titre in Typhoid Patients*

Titre	Number showing a Particular Titre		Height of Titre per 100 Individuals	
	Inoculated	Uninoculated	Inoculated	Uninoculated
1 : 10	–	–	–	–
1 : 25	–	27	–	34.6
1 : 50	10	45	17.8	57.7
1 : 100	37	6	66.1	7.7
1 : 200	9	–	16.1	–
1 : 500	–	–	–	–
Totals ..	56	78		

It is evident from Table II that Vi antibody was present in the serum from every case of typhoid fever, whether previously inoculated or not. A distinct difference was, however, seen to have been caused by inoculation, so far as the titre of this antibody is concerned, in that the inoculated individuals generally gave a higher reading. Whereas in the uninoculated more than 90 per cent. of the cases examined did not show a titre higher than 1 in 50—34.6 per cent. of these reacting only in the dilution 1 in 25—among the inoculated, on the other hand, a titre of 1 in 100 was obtained in as high a percentage as 66.1 and that of 1 in 200 in another 16.1 per cent. It was noticed that those individuals who have had the benefit of multiple inoculations recorded, as a rule, a higher titre than those who had undergone a single course.

Advantage was taken in sixteen cases (eight inoculated and eight uninoculated) to bleed the patient every third morning so that the development of Vi antibody could be studied every forty-eight hours. Two sample cases are illustrated in Charts I and II.

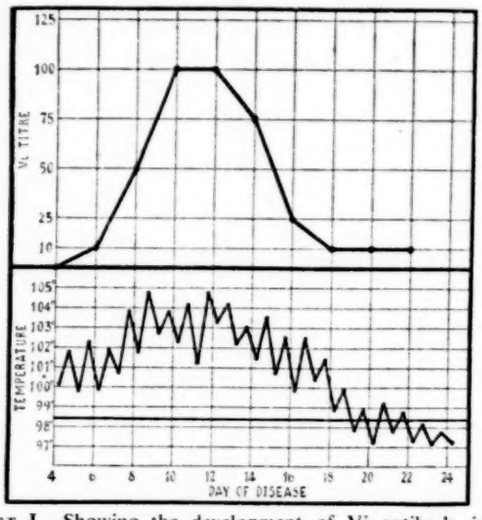


CHART I.—Showing the development of Vi antibody in an inoculated person.

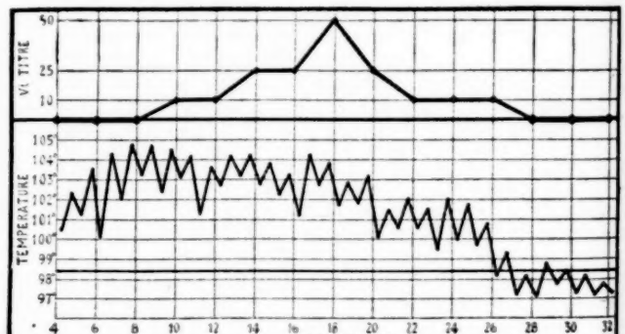


CHART II.—Showing the development of Vi antibody in an uninoculated person.

It is seen from the charts that the Vi antibody response was different in the two types of individual. In the inoculated the rise of the Vi agglutinin curve was steeper, more Vi antibody was produced, and the highest point was reached much earlier (on the tenth day in this case); in the uninoculated the rise was much more gradual, and the highest titre (only 1 in 50, compared with 1 in 100 of the inoculated person) was not reached till the eighteenth day. It is of interest to note, however, that the fall of the curve was rapid in both cases.

These two curves exemplify what has been observed by us in an average inoculated and an average uninoculated case in which the typhoid fever takes what may be described as a normal course. Departures from the normal in the clinical course of the disease were noticed to produce variations in the elaboration of the Vi antibody as well. Thus in an inoculated community like the Army

it was common to see the infection follow a modified course in which the symptoms were mild and the pyrexia did not last more than eight to ten days. Here the rise of the Vi antibody curve was observed to be much more steep, and so was the fall, the difference in the titre in the course of twenty-four hours being as much as four times. Thus it was not unusual to find a titre of 1 in 100 one morning to be followed by a reading of 1 in 25 the day after.

Typhoid fever in an uninoculated individual in India commonly presents a textbook description of this disease —namely, a step-ladder type of pyrexia, the typical rash, the tympanitic abdomen with "pea-soup" stools, and complications like severe mental disturbances, haemorrhage, and relapse. It was noticed as a rule that the titre of Vi antibody continued to be low till late in the disease in those cases where either the clinical course was severe or the pyrexia prolonged, or a relapse set in later.

From the point of view of the diagnosis of acute typhoid condition with the aid of Vi agglutination, it has been our experience that in an inoculated community a definite conclusion can be arrived at by the end of the first week. The Vi titre was found by then to have been in the region of 1 in 25 to 1 in 50, which could be easily detected with the help of the strain "Vi I."

In an uninoculated population a positive Vi agglutination reaction is of definite diagnostic value. A negative result, on the other hand, cannot be relied upon to exclude the presence of typhoid infection, since the Vi antibody is produced with difficulty in this type of individual and at a much later date during the course of the infection. In a case which runs an uninterrupted course frequent serological tests will, however, detect the presence of this antibody at a titre of 1 in 10 to 1 in 25 during the second week. In cases which relapsed it was noticed that generally no Vi antibody could be found during the primary rise of temperature, a positive Vi agglutination being obtained only during the course of the secondary rise.

Before the identification of the strain "Vi I" the Vi titre of a serum was determined by testing it against three different strains of *Bact. typhosum*, sensitive to O, H, and Vi agglutinins respectively, and the reading of the Vi reaction was taken in the simultaneous presence of O and H agglutination. Where the Vi titre was low the alternative method of completely absorbing the serum of its O and H antibodies was resorted to. This procedure inevitably resulted in the reduction of the already low Vi titre of the serum due to non-specific factors. Further loss took place owing to the absorption of a certain amount of Vi antibody by the small amount of Vi antigen present in the so-called Vi-free organisms that are employed for this purpose.

In view of these technical difficulties in assessing the Vi antibody content of a serum it can be easily understood why the study of this antibody in human infection has not progressed beyond its simple recognition by a few observers (Felix *et al.*, 1935; Bensted, 1937; Lewin, 1938). To start with, the impression was gaining ground with us that the Vi antibody is produced in a large number of inoculated individuals but very rarely in those who are not inoculated. It has only been possible to demonstrate the presence of this antibody in every case of typhoid fever since pure Vi agglutination has been obtained with the help of the strain "Vi I," which is sensitive to the Vi antibody but is insensitive to the O and the H agglutinins in as low a dilution as 1 in 10 (see Table I).

Up to the present we have not failed to correlate a positive Vi agglutination reaction with either the isolation of the infecting organism or with a positive clinical picture of typhoid fever where bacteriological proof of the presence of typhoid infection could not be obtained. The great advantage of this type of agglutination lies in the fact that a positive result clinches the diagnosis of typhoid fever, there being no interference in the interpretation of the serological test from either the normal or the inoculation agglutinins such as occurs with the O and the H types of agglutination. In a recent personal communication Bensted expressed the opinion that T.A.B. inoculation does give rise to Vi antibody, but only in very small amounts, not large enough to be taken account of in Vi agglutination. On this basis he compares the altered Vi antibody reactivity of an inoculated individual to typhoid infection to the very rapid response to diphtheria toxin when there are minimal amounts of antitoxin in the blood.

It is necessary to emphasize certain technical points in connexion with the quantitative estimation of the Vi antibody. Dreyer's tubes are not suitable for Vi agglutination tests. The type of tube with a round bottom, employed in Felix's technique for the differentiation between O and H agglutination, is most suitable for Vi agglutination. The tubes are about 5 cm. long and have a uniform internal diameter of about 1.25 cm. The difference between the agglutinated bacteria and those that have simply settled down can be easily made out in these tubes, since they permit the shaking of the whole serum-suspension mixture. The clumped bacilli in Vi agglutination have a tendency to distribute themselves round about the lowest quarter of an inch of the agglutination tube, where they appear as a general haze to the naked eye. When the tube is shaken these agglutinated bacteria become readily visible as a considerable mass of somatic agglutination.

With a view to preparing sterile suspensions of strain "Vi I" suitable for Vi agglutination various chemical reagents were tried. None of them has so far proved to be entirely satisfactory. The agglutinability of the organisms so treated diminishes rapidly. Formalized suspensions (0.5 c.cm. of pure formalin added to every 80 c.cm. of the suspension) or those prepared with mercury perchloride (1 in 1,000 $HgCl_2$ in normal saline) can, however, be trusted to give reliable results for a period varying from four to ten weeks. It is therefore necessary that the Vi sensitivity of the suspension should be tested every few days against a pure Vi serum of known titre.

Vi Agglutination in Detection of the Typhoid Carrier Condition

During convalescence from typhoid fever it was observed that, as a rule, only traces of Vi antibody could be found in the serum. In a certain number of cases, however, the Vi titre continued to be high in spite of the termination of the acute infection. Further investigations revealed that this variation connoted a tendency towards the typhoid carrier condition. It was possible to study the serum reactions of four such individuals over a period of one year side by side with the examination of their stools and urine for the presence of the typhoid organism. None of the patients gave a history of previous T.A.B. inoculation. Three of them were faecal carriers and one urinary. Specimens were obtainable at approximately one-month intervals. The results are reproduced in Table III.

A correlation between the typhoid carrier condition and the presence of Vi antibody in the serum is evident from this table. Individual No. 1 proved to be only a tem-

TABLE III

Time After Acute Typhoid Infection	Temporary and Chronic Typhoid Carriers															
	No. 1				No. 2				No. 3				No. 4			
	Isolation of Typhoid Bacilli	Agglutinin Titres			Isolation of Typhoid Bacilli	Agglutinin Titres			Isolation of Typhoid Bacilli	Agglutinin Titres			Isolation of Typhoid Bacilli	Agglutinin Titres		
		Vi	O	H		Vi	O	H		Vi	O	H		Vi	O	H
1 month	+	50	100	100	+	100	200	100	+	50	200	200	+	100	200	50
2 months	+	25	100	50	+	50	100	25	+	50	200	50	+	100	100	25
3 „	+	10	50	50	+	50	50	25	+	50	100	25	+	50	50	25
4 „	−	−	50	25	+	50	50	25	+	50	100	25	+	50	100	25
5 „	−	−	50	25	+	50	100	25	+	50	100	25	+	50	100	25
6 „	−	−	50	25	+	50	100	25	+	50	100	25	+	50	100	25
7 „	−	−	50	50	+	50	100	25	+	50	100	25	+	50	100	25
8 „	−	−	50	50	+	50	100	25	+	50	100	25	+	50	50	25
9 „	−	−	50	50	+	50	100	25	+	50	50	25	+	50	50	25
10 „	−	−	50	50	+	50	100	25	+	50	50	25	+	50	50	25
11 „	−	−	50	50	+	50	100	25	+	50	50	25	+	50	50	25
12 „	−	−	50	50	+	50	100	25	+	50	50	25	+	50	50	25

porary carrier. After the third month no typhoid bacilli could be isolated from his urine or his faeces, nor could the Vi antibody be demonstrated in his serum. The three persons whose serum continued to give a positive Vi reaction proved to be true chronic carriers. The typhoid bacilli isolated from their faeces were invariably found to be virulent Vi-containing organisms.

Pijper (1930), Ashby (1931), Wyllie (1933), and others have suggested the estimation of O agglutinins for the detection of the typhoid carrier condition. The O titres in our series appear to be significantly high. But when this observation is considered in conjunction with the normal level of the typhoid O agglutinin in India, which has been shown to be as high as 1 in 100 in 64 per cent. of the individuals examined (see Bhatnagar *et al.*, 1937), the figures reproduced in Table III, obtained by the same technique of agglutination, cannot be taken to be more than suggestive of the chronic typhoid carrier condition.

The suggestion that possibly Vi agglutination may be a useful method of detecting chronic typhoid carriers was made by Felix, Krikorian, and Reitler (1935), and was followed up by Giovanardi (1936, 1937) in Italy and by Pijper and Crocker (1937) in South Africa. More recently the results of the examination of a considerable number of chronic carriers were published by Felix (1938). I myself have been using Vi agglutination in the routine carrier examination of a large number of individuals, such as is done in the Army in India, and in tracing the source of infection of a particular case or a group of cases of typhoid fever. The detection of Vi antibody in a serum is taken to be an indication for a thorough search for typhoid bacilli in the stools and urine. We have not yet come across an individual who while excreting typhoid bacilli failed to produce evidence of the presence of Vi antibody in his serum. The procedure not only led to the saving of a considerable amount of time and material, but also reduced the chances of missing a carrier in whom the discharge of bacilli was intermittent.

Summary

A strain of *Bact. typhosum* which gives rise to pure Vi agglutination has been identified.

With the help of this strain the Vi antibody is shown to be produced in every case of typhoid fever, the inoculated individuals producing a higher Vi titre than the uninoculated.

Vi agglutination is shown to be a more reliable method of diagnosing typhoid fever in the inoculated than the time-honoured O and H types of agglutination.

A correlation between the typhoid carrier condition and the presence of Vi antibody in the serum is described. The employment of Vi agglutination in the routine carrier examination and in tracing the source of typhoid infection is suggested.

I wish to express my indebtedness to Colonel J. Taylor, D.S.O., C.I.E., V.H.S., I.M.S., Director, Central Research Institute, Kasauli, India, for his kind help and valuable criticism.

REFERENCES

Ashby, W. R. (1931). *J. Path. Bact.*, **34**, 109.
Bensted, H. J. (1937). *J. R.A.M.C.*, **68**, 1.
Bhatnagar, S. S., Freeman, J. F., and Dhilon, C. S. (1937). *Indian J. med. Res.*, **24**, 597.
—— Speechly, C. G. J., and Singh, M. (1938). *J. Hyg.*, Camb., **38**, 663.
Felix, A. (1924). *J. Immunol.*, **9**, 115.
—— (1938). *Lancet*, **2**, 738.
—— and Bhatnagar, S. S. (1935). *Brit. J. exp. Path.*, **16**, 422.
—— Krikorian, K. S., and Reitler, R. (1935). *J. Hyg.*, Camb., **35**, 421.
Giovanardi, A. (1936). *Boll. Soc. ital. Biol. sper.*, **11**, 163, 943.
—— (1937). *Z. Hyg. InfektKr.*, **120**, 273.
Lewin, W. (1938). *Publ. S. Afr. Inst. med. Res.*, **7**, 413.
Pijper, A. (1930). *J. Hyg.*, Camb., **29**, 380.
—— and Crocker, C. G. (1937). *Ibid.*, **37**, 332.
Topley, W. W. C., and Wilson, G. S. (1936). *The Principles of Bacteriology and Immunity*, London.
Wyllie, J. (1933). *Amer. J. Hyg.*, **18**, 393.

With the October issue the *Jahrbuch für Kinderheilkunde* has become an international journal under the editorship of Dr. E. Freudenberg of Basle, published by S. Karger at Basle. Its other titles are *Annales Paediatrici*, *International Review of Pediatrics*, and *Revue Internationale de Pédiatrie*. The journal is open to receive articles in German, English, or French, and each paper will be summarized in these languages. The editorial board consists of representatives from Turkey, Switzerland, United States, Poland, Holland, Yugoslavia, Palestine, and France.

HYPERSUSCEPTIBILITY TO BASAL ANAESTHETICS*

BY

B. P. HILL, M.B., Ch.B., D.A.

The investigation of problems arising in basal anaesthesia is very difficult, since so many factors go to make up the complete anaesthetic record of each case. To mention but a few of these factors, one may say that the patients are often in an abnormal state, either physically or psychologically, before the drugs are given; also, that in some cases other drugs are used in addition to the basal anaesthetic, and these complicate the picture. Furthermore, different operative procedures produce widely different effects upon patients, and these effects might be attributed in some cases to the method of anaesthesia and the drugs used. In view, therefore, of the difficulties to be encountered it would seem that accurate and full records of a large number of cases might furnish a valuable weapon with which to attack the problems involved. By observing factors that are common to many cases which react abnormally to basal anaesthetics, deductions as to their cause and prevention might be made. Perhaps it is no exaggeration to say that the drugs to which very few persons are hypersusceptible are the most difficult to investigate. An example of this is the use of paraldehyde: cases of hypersusceptibility to that drug are comparatively rare; but they do occur, and are very hard to explain, because comparison of common factors is almost impossible.

Avertin

Cases which are hypersusceptible to the action of this basal anaesthetic are more often seen, but are by no means common. As a result we know a little more about the causes of the hypersusceptibility to avertin. One of the most dangerous forms which this hypersusceptibility takes, but not the most common, is perhaps that of liability to liver-cell damage. In view of the similarity in chemical structure between avertin and chloroform, the comparison of their toxic effects is interesting. Both have a tendency to cause necrosis of the central cells of the liver lobules. The symptoms are very much the same with both drugs, and in the case of chloroform constitute what is known as delayed chloroform poisoning.

It has recently been shown that the liver extract of animals contains a substance which is able to protect liver cells from damage by small doses of chloroform. This substance has been isolated, and found to be sodium xanthine. When injected into animals sodium xanthine protects the liver cells from much greater doses of chloroform than those necessary to produce necrosis in normal animals. It is not unreasonable to suppose that the livers of people showing this form of hypersusceptibility to avertin might be deficient in this cell-protecting substance.

A recent case at the Royal Berkshire Hospital showed quite obvious symptoms of liver-cell damage following a dosage of avertin of 0.1 gramme per kilogramme of body weight. The patient recovered, and it was found later that she had revealed almost identical symptoms following chloroform anaesthesia twelve years previously. On the first occasion pure chloroform had been administered for thirty-five minutes; at her recent operation no chloroform was used.

The above illustrates the use that might be made of the previous anaesthetic history of a case to indicate a possible hypersusceptibility to avertin or any other basal anaesthetic.

The Barbiturates

In a series of 300 cases in which nembutal, sodium evipan, and sodium amytal were used forty-six showed hypersusceptibility in some form or other. The most common symptom was that of severe post-operative restlessness, for the control of which morphine was required in many cases. The next most common form was that of prolonged narcosis, which in one instance lasted for nineteen hours.

Other symptoms that suggested hypersusceptibility were:

(*a*) Respiratory depression, which resulted in cyanosis in two cases.

(*b*) A fall in systolic blood pressure to 90 mm. Hg.

(*c*) The appearance of albuminuria, which persisted for four days in a patient previously albumin-free.

(*d*) An increase in bronchial secretion, which resulted in cyanosis in a patient whose supplementary anaesthetic was nitrous oxide-oxygen only.

Certain conditions and diseases seemed to favour hypersusceptibility to a barbiturate, but they were by no means constant in the effects produced. They included:

1. Arteriosclerosis, especially when accompanied by high blood pressure.

2. Senility, even in the absence of obvious pathological changes.

3. Anoxaemia of the body tissues.

4. Toxaemia of bacterial origin. This was especially marked in the toxaemia due to the haemolytic streptococcus.

5. The presence of shock.

6. Pulmonary disease.

The use of the barbiturates in cases showing clinical evidence of hepatic disease was avoided.

Thirty-six cases of the series in which hypersusceptibility was suspected were given sodium amytal in a dose of half a grain per stone of body weight. Where necessary this amount was administered in a divided dose, and the effect of each dose was carefully observed. In twenty-four of these patients the suspicion proved to be justified, because twenty-two of them showed severe post-operative restlessness and two prolonged narcosis. These results suggested that although in some cases hypersusceptibility might be anticipated, this anticipation proved correct in only about 66 per cent. of cases.

It is probable that hypersusceptibility in an individual varies within wide limits. Some of the patients in this series had had repeated operations, and the same dose of the same drug was given on each occasion, the conditions being kept as nearly constant as possible. Fourteen cases were investigated thus, and not one showed hypersusceptible tendencies twice, though three patients had abnormal reactions to the drug on one of their visits to the operating theatre.

Another factor which seemed to influence the appearance of hypersusceptibility was the route by which the drug was administered. When given intravenously nembutal produced shorter periods of post-operative restlessness in certain susceptibles than when the oral route was used, but the symptoms appeared very much earlier after operation and were usually more severe. Prolonged narcosis and respiratory depression were more frequent

* Paper read to the Section of Pharmacology at the Annual Meeting of the British Medical Association, Plymouth, 1938.

when the intravenous route had been used. All cases in which the drug was given intravenously showed temporary albuminuria. In one case this persisted up to the fourth day.

The muscular contractions that were fairly common during and following the injection of evipan were not seen with nembutal used intravenously to the point of loss of consciousness. One out of the six healthy men who each received a fairly rapid intravenous injection of 10 c.cm. of cold sterile normal saline had an attack of shivering following the injection. This led to the inference that perhaps these muscular tremors are not a manifestation of hypersusceptibility to evipan in all cases.

In an attempt to detect hypersusceptibility to a barbiturate a test rather similar to the Schick test was devised. This was used in 210 cases. Into the skin of the forearm was injected 0.2 c.cm. of a 10 per cent. solution of sodium amytal, a control injection of sterile saline being made at the same time. The sites of injection were observed for the appearance of erythema. The results showed the unreliability of such a test in a very striking manner.

Conclusion

Hypersusceptibility is rare with the use of paraldehyde as a basal anaesthetic. Its explanation is very difficult in consequence, and cases are hard to anticipate.

More undue susceptibility is seen when avertin is used, and therefore rather more information as to the cause and avoidance of symptoms is available. Hypersusceptibility results in liver-cell damage in certain cases, and this may be due to the deficiency of a substance which normally protects the liver cells from necrosis during the detoxication of avertin.

With the barbiturates, hypersusceptibility is very inconstant, even in the same individual. Certain factors favour an undue reaction to a normal dose of the drugs, and though not absolutely constant these factors must be considered as a guide to dosage. No reliable test has so far been devised by means of which hypersusceptibility may be detected, and a skin test proved to be wholly unreliable.

Summary

It is suggested that deductions as to the cause and the prevention of hypersusceptibility to basal anaesthetics might be made by observing common factors in a large series of cases.

The liability to liver-cell damage from the use of these drugs is discussed.

Certain diseases and symptoms that suggest hypersusceptibility are recorded.

The route of administration is discussed as a factor in hypersusceptibility.

At the first public exhibition of its kind in the United States of America, held at the Harlem Art Center in New York City under the auspices of the Government's Federal Art Project and of the Bellevue Hospital's Psychiatric Division, 106 pictures were shown as the work of disordered minds. The artists included moronic children, chronic alcoholics, advanced epileptics, schizophrenics, manic-depressives, and victims of G.P.I. The majority of the exhibits told of mental conflicts and had but scant contact with reality, being shapeless (sometimes senseless), lurid, and gruesome. The idea underlying the art classes at Bellevue is to attempt a cure of the mentally sick by encouraging them to express their conflicts and at the same time to give psychiatrists a clearer picture of their patients' emotional life.

TREATMENT OF ACUTE OSTEOMYELITIS BY ULERON

BY

ALEX. MITCHELL, Ch.M.

Lecturer in Surgical Diseases of Children and Orthopaedic Surgery in the University of Aberdeen

My object in writing this note is not merely to record a short series of successful cases but to draw further attention to the use of uleron in the treatment of osteomyelitis. If it is of the value which I for the present am led to believe that it is, my belief can be confirmed by the observations of others, who I hope will put it to trial if they have not already done so.

The treatment of acute septic osteomyelitis demands the consideration of three problems: the relief of the abscess which is usually present; the treatment of the general infection, which in many cases manifests itself in the form of a virulent septicaemia; and the best method of dealing with the actual bone infection, which, although apparently responding satisfactorily to local treatment, may show a persistent tendency to recur, and this over a period limited only by the patient's span of life. For many years I have been interested in these problems, and after a close examination of the subject it seems to me that we cannot honestly maintain that our treatment has advanced much during the last twenty-five years, if we are to take as our criterion a highly improved mortality rate and an increased freedom from late recurrence of infection.

Practical experience over a long period improves one's judgment as to when to operate and as to the type of operation suited to each particular case; but it has been found that sera and blood transfusions are of very little value in the treatment of the severer types of septicaemia, and we still have to rely on Nature's powers of clearing up such infections. The liability of cases apparently completely cured to show severe and intractable recurrences years afterwards has, in my opinion, never received sufficient recognition. It is the knowledge of this liability to recur that has caused me always to be an advocate of complete subperiosteal resection in suitable cases.

The various forms of treatment advocated from time to time are familiar to us all, but the fact that they show such variety must surely mean that no one of them has been found to provide a complete solution to our difficulties. Hitherto no specific agent has been discovered that will really influence the staphylococcal septicaemia so often present, but my experience during the last year has led me to wonder whether we have not at last been offered something which, from the limited trial I have been able to give it, appears to be a curative agent worthy of more extended trial.

Five cases of acute osteomyelitis have been treated with uleron in addition to the ordinary local treatment. This drug, a sulphonamide preparation made by Bayer Products Ltd., has been used in tablet form (7½ grains). To young children we have given one tablet every four hours. The period over which it has been administered has varied up to several weeks.

The cases treated are few in number, but may be considered representative cases because they are all of the really severe type of osteomyelitis, and in each of four of them a different method of operative treatment was adopted; in the other no operation was done. Four were treated in the Royal Aberdeen Hospital for Sick Children, one in a nursing home.

Case I

A girl aged 11 was admitted to hospital on December 13, 1937, with a history of three days' illness—typical acute osteomyelitis of the lower end of the right femur with abscess formation. The child was very ill, and had a temperature of 102° and pulse of 126. An incision was made down to the bone, which was not drilled (Mr. S. G. Davidson). On the 17th there was pain and swelling of the left tibia, followed on the 18th by pain and swelling of the right humerus. Uleron, 7½ grains, was given thrice daily for about a week, beginning on December 17. Three days after uleron was started the temperature began to fall and the general condition rapidly improved. There was no operative treatment for the tibia or humerus. The patient was discharged in April, 1938, with the wound in the right leg healed.

Skiagrams showed the typical appearance of osteomyelitis in the femur, tibia, and humerus. *Staphylococcus aureus* was found in the pus. The report from a blood culture was negative, but there must have been considerable blood infection, as proved by the appearance of two very definite secondary foci.

Case II

A boy aged 4 was admitted to hospital on July 15, 1938, with a history of three days' illness, and also of swelling and pain at the lower end of the femur. The appearance was typical of osteomyelitis; temperature 102°, pulse 160. The child was gravely ill, and it was considered that any operative procedure was not justified. Uleron was given every four hours and continued for three weeks, when the child's face began to look rather bluish and use of the drug was discontinued. Two days after uleron was started his condition began to improve, and his temperature fell to normal in a week.

Skiagrams showed periosteal thickening at the lower end of the femur and, later on, a small focus in the shaft higher up. Blood culture showed the presence of *Staph. aureus*. The child was discharged one month after admission apparently cured.

Case III

A male child aged 2 was admitted to hospital on June 23, 1938, having a history of two days' illness, with pain and swelling at the upper end of the left tibia and an abscess. He was very ill, his temperature being 104° and his pulse 160. Uleron, 7½ grains, was given every four hours. On June 27 the abscess was incised down to the bone, and on July 20 the whole shaft was easily removed subperiosteally. A small part of the circumference of the shaft was sawn off in all its length, boiled, and replaced in the periosteal bed. Pus and blood culture made on June 27 showed *Staph. aureus*, but on July 6 blood culture was negative. A small secondary abscess developed in the lower end of the right radius, but this cleared up quickly after being drilled. On August 19 the leg wound was very clean. The granulations were exceptionally fresh-looking, and the tibia was re-forming in very good position.

Case IV

A youth aged 16 was admitted to a nursing home on July 21, 1938, with pain and swelling of the lower end of the right femur. The temperature was 106° and pulse 120. The abscess was incised on the same day. Four drill-holes were made and a small piece of the cortex of the femur was removed. Uleron, 7½ grains, was given every four hours. Blood culture was positive to *Staph. aureus*. A second blood culture on August 1 was negative. This patient showed a very rapid improvement, but uleron had to be discontinued after eight days owing to skin irritation.

Skiagrams showed that a considerable length of the shaft of the femur was infected. On August 18 there was very little discharge from the wound and the patient's general condition was excellent.

Case V

A boy aged 6 was admitted to hospital on August 10, 1938, having a history of two days' illness. His temperature was 102° and the pulse 138. There was pain and swelling over the lower end of the right femur, and the abscess was incised. Two drill-holes were made in the lower end of the femur; acriflavine and vaseline gauze dressing were applied and the leg fixed in plaster-of-Paris. Uleron, 7½ grains, was given every four hours. The temperature fell to normal in eight days. The child was very comfortable, and up to the time of writing the dressing has not been changed. Examination of the pus showed the presence of *Staph. aureus*. Blood culture was negative. This case was not quite so severe as the others, and has made exceptionally good progress.

Commentary

These case notes have been made as brief as is possible, and any discussion of local dressings, splintage, and sun exposure has been omitted.

As I have pointed out, the series is a short one, and it may be argued that similar recoveries might have been obtained by treatment other than that adopted, but I feel strongly that all these cases have done exceptionally well, particularly Cases I and II, which seemed absolutely hopeless. All of them were definitely of the really severe septic osteomyelitis, and not of the milder type sometimes seen.

PELVIC HYDATID CYSTS AND OBSTRUCTED LABOUR

BY

MOSTYN P. EMBREY, B.Sc., M.B., B.Ch., M.R.C.S.

Ewen Maclean Research Scholar and Second Assistant, Department of Obstetrics and Gynaecology, Welsh National School of Medicine

Perusal of the literature leaves little doubt that, in this country at least, obstructed labour is only rarely caused by a hydatid cyst. Such a case recently seen in the practice of the maternity department of the Cardiff Royal Infirmary prompted me to consult the hospital records. They revealed a similar case fifteen years ago, and so this opportunity is taken of describing both cases.

Case I

A 5-gravida aged 33 was admitted on October 24, 1923, having been referred by Dr. Burns of Abertillery. She had previously had four living children—three *per vias naturales* and one by Caesarean section—and no miscarriages. The patient had been unwell during the early months of pregnancy and a hydatid cyst had been removed from the anterior aspect of the uterus at the fifth month.

Examination revealed a full-term pregnancy, labour being obstructed by a large mass in the pouch of Douglas. Classical Caesarean section was performed and a full-term living child weighing 6 lb. was delivered. The uterine incision was brought together with mattress sutures and the abdomen explored. The uterus, especially its right lower aspect, was studded with small tubercle-like bodies. There was a large retro-uterine fluctuant mass in the pelvis, with a number of hard white masses resembling caseous glands attached to the omentum. On manipulation the pelvic mass ruptured, and what appeared to be pus and masses of endocyst were extruded. A large number of cysts of all sizes were attached to the omentum and peritoneal surfaces, and were removed. Further exploration revealed a hard calcareous mass attached to the under surface of the liver, but whether primarily there or in adherent omentum could not be ascertained. Removal of the mass was

considered inadvisable. Subtotal hysterectomy was then performed, with removal of the left appendages and what remained of the right, and the abdomen was closed.

Progress was fairly satisfactory until the twenty-fourth day after operation, when the patient suddenly collapsed and died, apparently from a pulmonary embolism. Permission for a post-mortem examination was not obtained.

Case II

An 8-gravida aged 35 was referred to the Infirmary by Dr. Roberts of Barry on February 5, 1938, as a case of labour obstructed by a pelvic tumour. She had had three miscarriages followed by four normal confinements, the last being two and a half years previously.

At the time of admission the membranes had been ruptured thirty-five hours and labour had been in progress sixteen hours. Abdominal examination revealed a full-term pregnancy, the foetus presenting by the breech in the left sacro-anterior position and the foetal heart rate being 138 per minute. Contractions were recurring every five minutes. On vaginal examination the cervix was found to be half dilated, with the breech presenting high up. There was a firm irregular mass in the pouch of Douglas about the size of a coconut which did not appear to be attached to the uterus and which was obviously obstructing labour. A tentative diagnosis of impacted ovarian cyst was made.

Classical Caesarean section was performed and the patient delivered of a full-term living child weighing 6½ lb. The uterine wound was closed and the abdomen explored. There were multiple cysts in the abdomen—eight to ten in number. The ovaries were not involved. One cyst attached to the upper surface of the bladder, and a second attached to the descending colon by adhesions, were removed for microscopical examination. Other cysts were intimately attached to the colon and mesocolon, and varied from the size of a walnut to that of a coconut. One such cyst was impacted in the pouch of Douglas, obstructing labour. As removal of all the cysts would have meant considerable dissection and have taken much time, it was thought advisable to close the abdomen. Convalescence was uneventful, and the patient was discharged twenty-five days after operation.

The diagnosis of hydatid cyst was confirmed microscopically. A blood count revealed an eosinophilia of 5 per cent. and the Casoni reaction was positive. The patient had always enjoyed good health, and inquiry failed to elicit any previous, family, or social history suggesting hydatid disease.

Pathological and Clinical Considerations

The two cases described were almost certainly examples of secondary echinococcosis. They serve to emphasize certain pathological and clinical aspects of hydatid disease which are as yet not sufficiently appreciated and which may be briefly outlined.

Following ingestion of the ovum the hexacanth embryo hatches in the upper part of the alimentary canal and, travelling via the radicles of the portal vein, lodges as a rule in the liver. Here, as a result of growth changes which need not be detailed, the typical univesicular hydatid cyst is formed, consisting of an outer ectocyst, or laminated layer, and an inner endocyst, or germinal layer containing specific fluid in which float the reproductive elements—the whole surrounded by a fibrous adventitia derived from the host. The scolices grow inside specialized brood capsules, and with their formation the cyst may be said to be fully developed. Such a cyst is typically found in a child or young adult; for in the majority of cases infestation takes place in childhood, so that the cyst is nearly as old as the host.

In nearly all instances it is the onset of complications that determines the first clinical manifestation of hydatid disease. In the great majority of cases these complications depend on the previous escape of fluid from the cyst—varying from a slight leak to a frank rupture—and commonly occur after the third decade of life.

Rupture of the cyst may take place into the subcutaneous or muscular tissues, into the bile ducts, bronchi, alimentary canal, or urinary tract; into a serous cavity such as the peritoneum, pleura, or pericardium; or into the chambers of the heart or large veins. Each presents its own characteristics, but according to Dew (1930–1) the sequelae may be grouped as follows:

General—applicable to all types:
1. Immediate: Anaphylaxis.
2. Delayed: Secondary echinococcosis.

Special—applicable particularly to rupture into a natural channel:
1. Immediate: Mechanical effects.
2. Delayed: Suppuration in the cyst.

Of these sequelae it is only necessary to consider briefly anaphylaxis and secondary echinococcosis.

ANAPHYLAXIS

The appearance of anaphylactic phenomena following rupture or puncture of a hydatid cyst has been noted many times. The most common of these manifestations are urticaria, dyspnoea, cyanosis, abdominal pain, vomiting, syncope, and delirium. The severity of the anaphylactic reaction varies within wide limits, but it is probable that were more accurate histories obtained clinical evidence of anaphylaxis would often be revealed.

SECONDARY ECHINOCOCCOSIS

For many years the majority of clinicians regarded multiple cysts as evidence of multiple primary infestations, but it is now known that they are nearly always manifestations of secondary echinococcosis following rupture of the primary cyst and the implantation of daughter cysts or scolices. There are many clinical examples of this phenomenon, but only two—the localized and intraperitoneal types—need be mentioned.

Slight leakage of fluid from a single cyst, following puncture or mild trauma, may give rise to the formation of multiple secondary cysts within the confines of the adventitia, and is one of the commonest types of reactive daughter-cyst formation. Dew is of the opinion that probably all cases of endogenous daughter-cyst formation are best regarded as a special type of localized secondary echinococcosis.

Multiple secondary cysts of the peritoneal cavity are relatively common, and are always due to leakage of reproductive elements from a primary cyst of the liver or, rarely, the spleen or kidney. These secondary cysts become completely surrounded by the peritoneal epithelium, so as often to give the impression that they have developed in an extraperitoneal situation. They are of slow growth, with a latent period of from five to ten years before they produce symptoms. They are prone to further rupture, with the production of more cysts, so that ultimately the peritoneal cavity may be almost filled with hydatid cysts in all stages of development. The original primary cyst may be completely evacuated, so that after a lapse of years it may be exceedingly difficult to detect the primary site. More commonly, however, the rupture becomes sealed off by adhesions, and the residual germinal elements produce multiple daughter cysts—one type of localized secondary echinococcosis.

The multiple intraperitoneal cysts present in each of the cases described were undoubtedly produced by rupture of a primary hydatid cyst as outlined above. In Case I

the calcareous mass attached to the under surface of the liver would appear to have been the remains of the primary cyst. In Case II the primary cyst was not located. In neither case was a history suggestive of anaphylaxis obtained, so that the time of rupture of the primary cyst cannot be known; but it is likely that in each case multiple cysts had been present and unsuspected in the peritoneal cavity for several years.

In Case I the first manifestation of hydatid disease appears to have been in the earlier months of the pregnancy, when the patient began to feel unwell. Presumably in consequence of an examination laparotomy was performed and a hydatid cyst removed from the anterior part of the uterus. In Case II hydatid disease was not suspected until the occurrence of an obstructed labour due to a cyst being impacted in the pouch of Douglas. It is noteworthy that in both cases, although hydatid disease had probably been present for many years, it was not discovered until the fourth decade of life, and then only on account of an associated pregnancy.

Literature

References in the literature to the ubiquitous hydatid cyst in relation to pregnancy and parturition are few. Franta (1902) collected all the recorded cases and dealt with them in three papers. The first was concerned with dystocia due to hydatid cysts in the pelvis, and recorded thirty-six cases. The second contained an account of twenty-two cases in which operation for removal of the cyst was performed in pregnancy. The third dealt with the influence of pregnancy, labour, and the puerperium on hydatid cysts. I am aware of only four recorded instances in this country. Gemmell (1899) described a case of hydatid cyst in the omentum obstructing labour which was treated by abdominal section and removal in the puerperium. Blacker (1908) published a case of hydatid cysts complicating pregnancy in which Porro-Caesarean section was performed. Andrews (1908) also described a case in which pregnancy was complicated by the presence of a hydatid cyst in the pelvis. The remaining case is that of Bell (1925), whose patient had an obstructed labour necessitating craniotomy, the cyst subsequently being removed during a second pregnancy.

Summary

1. Two cases of obstructed labour due to a hydatid cyst are described because of their comparative rarity.

2. Both cases were examples of secondary echinococcosis with multiple cysts in the peritoneal cavity.

3. In neither case was there a history of anaphylactic manifestations such as frequently accompany rupture of the primary cyst.

4. Although hydatid disease had probably been present for several years, it had not been suspected. In the first case it was discovered at the fifth month of pregnancy, and in the second during labour.

I wish to express my thanks to Sir Ewen Maclean and Dr. M. D. Arwyn Evans for permission to publish these cases.

REFERENCES

Andrews, H. R. (1908). *J. Obstet. Gynaec. Brit. Emp.*, **14**, 333.
Bell, B. (1925). Ibid., n.s., **32**, 114.
Blacker, G. (1908). Ibid., **14**, 336.
Dew, H. (1930–1). *Brit. J. Surg.*, **18**, 275.
Franta, J. (1902). *Ann. Gynéc. Obstét.*, **57**, 166, 296, 420; **58**, 401.
Gemmell, J. E. (1899). *British Medical Journal*, **2**, 1603.

EPIDEMIC MYALGIA

FIVE CASES IN ONE HOUSEHOLD

BY

C. R. G. HOWARD, M.B., Ch.B.

Department of Medicine, University of Bristol

The following account of an outbreak of epidemic myalgia may be of some value, as it provides a possible differential diagnosis in cases of appendicitis, pleurisy, cholecystitis, and muscular rheumatism.

Survey of Literature

Daae (1874) in Norway is first credited with describing the disease, which, he says, is distinguished by pain in the chest and back, febrile disturbance, and relapses. Gradually it became recognized as a clinical entity, and by 1888 the name "devil's grip" had been associated with it in America. From this time it attracted little attention until 1930, when Sylvest (1930, 1931) gave a full account of an epidemic which occurred on the island of Bornholm, in which 10 per cent. of the population were attacked. He described the onset as sudden, with pain in the hypogastrium and nausea, the pain shifting to the chest and shoulders after a few hours. These symptoms are associated with fever, from 99° to 105° F., and the attack lasts a few days. Relapses are frequent. Sylvest noticed a seasonal incidence in summer and early autumn. The sexes are equally affected, and, although no age is exempt, most cases occur between the ages of 5 and 15. There appeared to be an incubation period of two to four days, and examination of the blood showed an eosinophilia.

Since 1930 there have been a few reports in the literature. Rector (1935) records nineteen cases in which the patient was under 8 years old, and he suggests the use of quinine sulphate in cases that do not clear up quickly. Smith (1937) gives an account of an epidemic at Rugby School, in which there were myalgic pains, chiefly in the back of the neck.

In 1934 the disease received more attention owing to several outbreaks in American towns. MacDonald, Howell, and Cooper (1937) investigated an outbreak in Cincinnati: clinically they found the same picture as did Sylvest, but there were no patients over 15 years of age. They point out that constipation was frequent and relapses after a few days were common features. These workers found no eosinophilia, but some of the patients had a leucopenia. Bacteriological investigations of the cerebro-spinal fluid were negative, as also were blood cultures. The Wassermann reaction was negative in all cases. Cooper and Keller (1937) tried to find a specific organism in washings of the throat and nose, but the only constant growth was a small colony type of *Streptococcus viridans*, to which they attached little importance. Later work with animals suggested a filterable virus as the cause, with a possible incubation period of eight to ten days. F. Wolter (1937), investigating a series of outbreaks in Germany, adds the fact that the urine is usually very dark in colour, and this, he suggests, is due to the presence of creatinine, which he attributes to the changes in the muscles. He discusses the connexion between epidemic myalgia and epidemic poliomyelitis, and points out that there is a similar seasonal and climatic incidence.

Case Records

Case 1.—A man aged 26 first complained of epigastric pain, made worse by meals. The following afternoon the pain became very acute and was localized to the right costal margin; there were no clinical signs of pleurisy and a radiograph of the chest was normal. During the next two days the pain in the chest became much less severe, but it was made worse by deep breathing or laughing. Tenesmus was present. On the fifth day there was a relapse, with headache, sweating, and a temperature of 101° F. After 30 grains of aspirin had been taken there was a profuse perspiration followed by considerable improvement. During the next three days the pain in the lower part of the chest became less severe and was more generalized over the back and shoulders.

Case 2.—A woman aged 27 complained of vague abdominal pain with nausea; the next morning the abdominal pain was worse and tenesmus was pronounced; in the afternoon there was a sudden onset of pain in the right costal margin, aggravated by coughing or laughing. On the third day she felt better, but had a relapse in the afternoon, and complained of feeling hot and exhausted. The temperature was not taken. During the next three days the pain became less, and finally disappeared after a treatment with an infra-red lamp.

These patients did not go to bed.

Case 3.—A woman aged 26 complained of a sudden onset of pain in the abdomen and general malaise eight days after exposure to Cases 1 and 2. Her temperature was 103° F., and she went to bed. The next day the pain was localized to the right costal margin and was made worse by coughing or deep breathing. The morning temperature was 101° F., and the evening 102° F. A blood film was taken which proved normal. Tenesmus was present. On the third day she felt better; her temperature was normal and she got up. The following day there was a mild relapse, the patient feeling hot and sweating, but she managed to undertake a railway journey.

Case 4.—A baby aged 15 months had a general upset, being off her food and appearing to have pain in the abdomen, especially when crying; she was sick twice. The following day she was well but fretful. On the third day she had a relapse, the temperature being 102° F., but there were no localizing symptoms. During the next few days the child was off its food but was otherwise well. The motions were normal.

Case 5.—A female aged 17, nurse to Case 4, developed abdominal pain, with general malaise and a temperature of 99° F., ten days after Case 4 had recovered. The next day the pain was localized to the right side of the chest, where it persisted for two or three days. There was no relapse. This was a very mild attack, if one at all.

Commentary

These cases thus closely followed the clinical picture described by Sylvest, the main features being a sudden onset with abdominal pain and malaise, the pain moving to the chest, particularly the right costal margin (Cases 1, 2, and 3), on the second day, later diffusing all over the chest and shoulder. Pyrexia varied from 99° to 103° F., and tenesmus was present in three cases. A relapse on the third, fourth, or fifth day was noticed in four cases. Cases 3 and 5 appeared to have incubation periods of eight and ten days respectively.

The chief disabilities are intermittent attacks of malaise for about a week, combined with the inability to laugh or take a deep breath without excruciating pain in the chest, also the frustration, in spite of a strong urge, of being unable to defaecate satisfactorily.

It is interesting to note that at about the same time as the above cases occurred there were admitted to the local hospital more cases than usual, perhaps, of appendicitis that never came to operation. Unfortunately these were not investigated from the point of view of myalgia.

Summary

A brief review of the literature of epidemic myalgia is presented, together with an account of five cases occurring in one household.

References

Cooper, M. L., and Keller, H. M. (1937). *Amer. J. Dis. Child.*, **54**, 231.
Daae (1874). Ref. in *J. Amer. med. Ass.*, 1934, **102**, 460.
MacDonald, R. R., Howell, B., and Cooper, M. L. (1937). *Amer. J. Dis. Child.*, **53**, 1425.
Rector, J. M. (1935). Ibid., **50**, 1095.
Smith, R. E. (1937). *Clin. J.*, **66**, 330.
Sylvest, E. (1930). *Ugeskr. Laeg.*, **92**, 798, 982.
—— (1931). Ibid., **93**, 1155.
Wolter, F. (1937). *Klin. Wschr.*, **16**, 1087.

Clinical Memoranda

Domiciliary Emergency Treatment of Eclampsia

There is no gainsaying the fact that domiciliary treatment of persons acutely ill of obstetrical complications is the correct one, not only in the homes of the well-to-do but also in the overcrowded homes of the poor. Hospitals have their place in the treatment of disease, but a review of the table below proves beyond doubt that the emergency treatment of eclampsia at home is pre-eminently the best line.

Comparative Statement of Cases of Eclampsia Treated from 1933 to 1937 in Hospital and by Domiciliary Emergency Measures

	1933	1934	1935	1936	1937		Totals
Total admissions to hospital ..	1,416	1,649	1,759	1,729	1,780		8,333
Cases of eclampsia occurring in hospital or admitted after onset	13	13	17	26	17	Incidence 1.03%	86
Deaths ..	2	2	1	5	0	Average death rate 11.6%	10
Emergency team: Cases treated in own home	4	10	13	5	11		43
* Deaths ..	0	0*	0	0	0	0	0
Hospital and home cases combined ..	17	23	30	31	28		129
Deaths ..	2	2	1	5	0	Average death rate 7.7%	10

* Of the patients attended in their own homes during 1934 one was dead before the arrival of the emergency team.

As our experience increases the pitfalls become apparent: one that I have observed is where there is such a pronounced elevation of the blood pressure in a case of pre-eclamptic toxaemia that even the excitement attending transport and admission to hospital causes the patient to develop an eclamptic seizure, the prognosis of which it is difficult to forecast.

During the past five years 8,333 cases have been admitted to this institution, and eighty-six have suffered from eclampsia either before or after admission, with a mortality rate of 11.6 per cent.; whereas during the same period forty-three cases were treated in their own

homes without any mortality. During the period under review it has been left to the general practitioner in charge of the case to decide whether the patient should be admitted to hospital or not, and, generally speaking, those treated in their own homes have been seriously ill with advanced symptoms of eclampsia. One would therefore expect that the death rate of these cases would be considerably higher than that in the hospital, but that is not so. Previous to the advent of domiciliary emergency treatment the mortality rate from eclampsia was in the neighbourhood of 20 per cent.

TREATMENT

Our treatment of eclampsia is simple: a darkened room, freedom from noise, careful nursing, an initial sedative dose of morphine hydrochloride 1/6 to 1/4 grain, varying according to the severity of the attack, followed by doses of chloral and bromide, 20 grains of each, hourly until fits are controlled. No fluids are allowed during the unconscious state, and only a limited amount after the patient becomes conscious. Mist. senna co. 3 to 4 oz. orally and a magnesium sulphate enema are given if the bowels are obstinate. Lumbar puncture is performed under light anaesthesia, which is again resorted to if fits supervene.

H. J. THOMSON, M.D., M.C.O.G.,
Physician Superintendent, County Maternity Hospital.
Bellshill, Lanark.

Locked Twins

The following record of a case of locked twins with survival of the second twin seems worthy of publication.

A primipara aged 24 was admitted to hospital on August 18 as a case of obstructed labour. On admission a foetus was showing between the legs, having been born as far as the head in a breech presentation; it was dead. The history was that labour had started two days previously, was about six weeks premature, and the membranes had ruptured twelve hours before admission.

The woman was in good condition, and abdominal examination revealed twins, the second presented as a vertex. The patient was immediately given a general anaesthetic, and vaginal examination showed that the twins were locked, the head of the first, which was above the brim, being held up by the head of the second, which was in the pelvis. The second head was pushed up quite easily and the dead foetus removed. An internal version was then carried out upon the remaining twin, and it was extracted readily by the breech. It was found to be alive.

The woman had an uncomplicated convalescence, and the second twin survived after a severe attack of melaena neonatorum, which was treated by intramuscular injections of the mother's whole blood and haemoplastin. The twins weighed 4 lb. and 3 lb. 12 oz. respectively, the mother's pelvic measurements being 11 by 12 by 8 inches.

COMMENTARY

The interest of this case lies, first, in the rarity not only of locked twins but especially locking of the two heads (Queen Charlotte's *Obstetrics* stating that no case has been seen in the experience of that institution), and, secondly, in the survival of the second twin.

The fact that several cases have been recorded in the last few weeks shows that the condition is not as uncommon as is thought.

I wish to thank Mr. H. I. Deitch, medical superintendent, General Hospital, Halifax, for permission to publish this case.

J. J. RUSSELL, M.B.,
Resident Obstetrical Officer,
Halifax General Hospital.

Reviews

PROBLEMS OF POPULATION

Population: To-Day's Question. By G. F. McCleary. (Pp. 222; frontispiece. 6s. net.) London: George Allen and Unwin. 1938.

In more than one previous book Dr. G. F. McCleary has demonstrated his command of a lucid and agreeable literary style and his ability to present the really important part of a difficult scientific argument without using technical terms. His latest book, *Population*, is worthy of the reputation he has gained. It would not be difficult for a less skilful writer than Dr. McCleary to make a sensational story of the historical facts or a thrilling forecast of the future. But to make statistically clear why (1) an actual increase of population may be strong evidence that population will shortly decline enormously, (2) a decreasing population involves increasing unemployment, needs something more than literary facility. Dr. McCleary succeeds here, partly by a careful choice of arithmetical methods, partly by the use of judicious analogy. To the "common-sense" objection that population is in fact still increasing he retorts that no wise business man would disregard an unfavourable report of his accountant merely because his takings substantially exceeded his expenses. As Dr. McCleary succeeds in the most difficult part of his undertaking, it is not surprising that, in his exposition of opinions respecting the reasons for a decrease of population and of attempts to check the decrease, he is candid and instructive. His observations on the recent demographic history of Italy and Germany are particularly valuable.

Broadly speaking, measures to encourage an increase of population are of the following kind. The statesman endeavours by methods of differential taxation or occupational preference to reduce the social and economic disadvantage which, under modern conditions, parents with many children suffer. But as the positive effects of these measures never go further than to reduce the disadvantage it is necessary either to persuade the deliberately infertile that the measures are more effective than they really are or to change their emotional outlook on the facts of life. In Germany and Italy both plans have been in operation: in Italy for more than a decade; in Germany since 1933. In Italy the results have been trivial. "Signor Mussolini has done many wonderful things, but he has not yet succeeded in inducing his countrymen to produce more babies." Herr Hitler has been relatively more successful, but it is too early to say more. How far the relative success of the German campaign is due to (*a*) better planning of the financial aids or (*b*) a greater capacity of Germans to believe what they are told and act upon instructions is hard to say. Indeed, to form an opinion requires much more intimate knowledge of financial and psychological questions than most readers can have. Dr. Burgdörfer thinks a new confidence in the future is an important factor. If the German nation as a whole really possesses that confidence its spiritual condition is unlike that of some other populous nations. Whether recent events or the comments of public men of all shades of opinion upon those events are likely to foster confidence in the future of the British people is a question which Dr. McCleary naturally does not discuss. All will agree with one of the concluding sentences of his book—"Of one thing, however, we may reasonably be sure: the formulation of an effective population policy will be no

easy task." Indeed we might phrase this more harshly, and say that until statesmen have learned how to utilize and protect the population in being they need not spend time in planning to stave off a natural decline of population.

HAEMATOLOGICAL TECHNIQUE

Laboratory Manual of Hematologic Technic, including Interpretations. By Regena Cook Beck, M.A., M.D. With a Foreword by Frank W. Konzelmann, M.D. (Pp. 389; 79 figures, 72 tables. 18s. net.) London: W. B. Saunders. 1938.

The students of laboratory technique at the School of Medical Technology, Richmond, Va., will find the manual of haematological technique by Dr. R. C. Beck a valuable if not indispensable guide in their work. Laboratory technicians have a special professional status in the United States which has not as yet developed to the same extent in this country; they constitute an important group of workers almost exclusively women. This manual is a compilation of laboratory methods collected from various sources, many of which are unfamiliar to workers in this country, but are in routine application at Dr. Beck's institution, where they seem to fulfil the same useful purposes as those of all carefully planned methods. With the modern zeal for attaining accurate and reliable results laboratory technique has attained almost universally to so high a standard that there is little opportunity for selection, and every laboratory may safely adopt the methods best fitted to its equipment.

The methods chosen for this manual are clearly and simply described and comparatively free from the distraction of references and names of authorities. It is surely an inaccurate or biased claim of Professor F. W. Konzelmann in his foreword that "at the time of this writing there is no other single volume where so much information on the subject of procedure in haematology is contained between two covers." The book is, of course, American in style, but is commendably free from arresting words and expressions.

CONTROL OF VENEREAL DISEASE

Syphilis, Gonorrhoea and the Public Health. By Nels A. Nelson, B.S., M.D., and Gladys L. Crain. (Pp. 359; 15 tables. 12s. 6d. net.) New York: The Macmillan Company. 1938.

In few countries is the problem of venereal disease more difficult of solution than in the United States of America, and those who are interested may with advantage study *Syphilis, Gonorrhoea and the Public Health.* This book is divided into two main sections, the first dealing with the clinical and pathological side of venereal disease, and the second with its control. The former is excellent, giving a simple straightforward account of the history, diagnosis, and treatment of gonorrhoea and syphilis which is intelligible to any layman, and which might be read with profit by many doctors: though this is compressed into less than 150 pages there appear to be no important omissions and little to criticize. Perhaps to say that "if the red cells remain red the test [Wassermann] is positive," and "if the red cells are decolorized the test is negative," may hardly convey the true facts very accurately, while the diagram of gonococci does not look very much like the real thing; but these are minor shortcomings in a really admirable section.

The second section of the book deals with the incidence, prevalence, and control of venereal disease, and may well prove an eye-opener to the uninitiated layman, for the general public has very little idea of the extent to which venereal disease has permeated all ranks of society. A control programme should include both syphilis and gonorrhoea; it concerns health departments, the medical profession, and the social worker. Case finding, case control, treatment, and diagnostic facilities all have to be considered, and no less important is the education not only of the patient but of the doctor, the nurse, and the general public. It remains open to question whether compulsion in any form is more efficient than persuasion, but what is clear is that, so far as America is concerned, more money, more V.D. specialists, and more free treatment are required before there can be any hope of reducing materially the incidence of venereal disease. Conditions are far more difficult in the U.S.A. than in most countries owing to the number of component States and the different races involved, including, as these latter do, a large coloured element.

This book should appeal more particularly to the medical officer of health and to the social service worker; to the former it should make it clear that venereal disease cannot be controlled by the same methods as are other communicable diseases, and the latter will realize the importance of finding and holding cases and contacts. Now that the subject of venereal disease is no longer barred from ordinary conversation or by the Press, and now that the public conscience is being awakened to the seriousness of the problem, there is hope that much progress in its control will be made.

MATERIA MEDICA

Traité de Pharmacie Chimique. Volume I. Chimie Minérale et Chimie Organique (Série Acyclique). Volume II. Chimie Organique. (Two books.) By P. Lebeau and G. Courtois. Second edition. (Pp. 1,206 and 2,128; Vol. I, paper cover, 250 fr.; cloth, 280 fr. Vol. II, paper cover, 410 fr.; cloth, 460 fr.) Paris: Masson et Cie. 1938.

This is a comprehensive work on all kinds of therapeutic agents. It deals more especially with their chemical characters, properties, and relationships, but also includes information on matters of importance affecting their use in medicine. The plan of treatment is not dissimilar to that of works of a kindred nature, of which the *British Pharmaceutical Codex* is an example. Under the name of every substance, used as a title, there appears a descriptive monograph reciting generally the synonyms by which it is otherwise known, information relating to its source, the mode of preparation, the chemical formula and chemical properties, tests of purity, method of assay, the physiological action, therapeutic use, and the medicinal dose. Other matters of information are also interpolated whenever they are of material importance; such, for example, as the pharmacopoeias of other nations in which the substance is official. It does not describe crude vegetable drugs but only the active principles obtained from them, nor does it touch upon galenical products or formularies of the nature of prescriptions.

The monographs are arranged in sections corresponding with a chemical plan of grouping, one group comprising glucosides, another comprising alkaloids, and a third proteins. There is an introductory article to each sectional group giving a historical and general dissertation on the members of the series. Thus the leading article on tannins, which is treated as a subsection of the glucosides, recites the different varieties of substances distinguishable as members of the group, describes their relation to each

other, and gives an account of the more important researches by which their individual constitution has been established. This plan of treatment is well exemplified by the article on glycerophosphoric acid, which recites the first observation by Pelouze in 1845 that glycerin reacts with phosphoric anhydride with the disengagement of heat, and refers further to the work of Gobley, who isolated the substance from yolk of egg. Then follow descriptive references to the observations of successive authors who elucidated the relationships of the alpha and beta forms of the substance to each other: all this is described in illuminating detail with chemical formulae and equations. Then follow monographs on the several salts of glycerophosphoric acid. A similar discussion appears under the title of "radio-activity," followed by monographs on compounds of uranium, thorium, and others. The technology of alcohol is treated very fully. Its manufacture by fermentation and by chemical synthesis is described in detail, as well as various methods of dehydration in use for the production of absolute alcohol.

Perhaps the most outstanding feature of the work is its encyclopaedic character. Whatever therapeutic agent may be the subject of reference, whether it be the most recent product of synthetic chemistry or a well-nigh forgotten representative of bygone medical practice, an account of it will almost certainly be found. Organic substances prepared by chemical synthesis are treated in the same thorough manner to which allusion has been made above. Lebeau and Courtois's treatise is indeed *sui generis*; it cannot fail to prove valuable to anyone who is interested in the chemistry of therapeutic remedies.

A MEDICAL MISSIONARY IN THE SUDAN

The Doctor Comes to Lui. A Story of Beginnings in the Sudan. By Eileen Fraser. With an Introduction by the Bishop in Egypt and the Sudan. (Pp. 71; 26 illustrations, 2 maps. 1s.) London: Church Missionary Society. 1938.

In this little book Mrs. Eileen Fraser tells the story of a medical missionary and his wife in the Sudan. Lui, formerly Yilu, lies in the centre of the Moru country, virgin territory of Central Africa, a thousand miles south of Khartum and 120 miles west of the White Nile. Thither Mrs. Fraser and her husband, the late Dr. Kenneth Fraser, set out in the year 1920 to devote themselves to the task of bringing spiritual and physical comfort to the Moru people. With wattle and daub they built a house for themselves, a hospital, and a school on a site which had served for many years as the headquarters of a notorious slave trader. From these small beginnings an organization was built up, extending eventually to sixteen different centres, in which 27,423 cases were treated during the year 1937. Dr. Fraser, who died in 1935, proved himself not only a devoted doctor and evangelist but also a born organizer. Following a policy of decentralization he trained native helpers and established them in outlying stations, thereby enormously increasing the scope and value of his work.

Written in modest and straightforward style, Mrs. Fraser's book makes light of the immense difficulties to be overcome in this remote region, infested with wild animals, and with a backward population riddled with disease. The work of these two pioneers is the more admirable in view of the fact that Dr. Fraser was already in the forties when he first went to Moru. The value of the book, which may be especially commended to medical men, is enhanced by relevant maps and a large number of really good photographs. It is an excellent shilling's worth.

Notes on Books

A new edition has been published by H. K. Lewis and Co., Ltd., at 12s. 6d. of Mr. EUGENE WOLFF'S *Anatomy for Artists*, illustrated from original drawings by Mr. GEORGE CHARLTON, who has added a number of new figures. The trunk and limbs are shown in positions other than those necessarily used in descriptive anatomy, and the importance of the bony points lying under the skin is again emphasized. As we noted when reviewing the second edition, stress is rightly laid by Mr. Wolff on a thorough knowledge of the skeleton as an indispensable basis for the understanding of form and function. Mr. Charlton's drawings are clear and vigorous, and he brings out very well the distinction between the fleshy and the tendinous portions of muscles. New figures illustrate the importance of the skull in the formation of the face, show the position of the eyeball in its socket, and demonstrate the parts played by the thyroid cartilage and thyroid gland in the surface form of the neck. The production of this book reflects credit on author, artist, and publisher.

Erbleiden des Auges, edited by Dr. ARTHUR GÜTT, and published at Leipzig by Georg Thieme at the price of RM. 26, is a compilation by many contributors, and covers very much the same field as the larger and individual monographs on hereditary disease of the eye by Waardenburg and by Franceschetti. A certain amount of more recent literature is noted in the present volume, which, like the *Handbuch der Erbkrankheiten*, of which it is part, is essentially utilitarian rather than academic, and aims at giving the necessary scientific background for the application of the German eugenics laws. Much of the space is devoted to medico-legal discussions which are only of indirect interest to the English reader. So far as the academic matter is concerned, some sections, notably that of Bücklers, are comprehensive and valuable; others are distinctly sketchy. The book is profusely illustrated, and some of the bibliographies are useful.

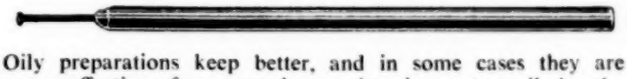
Preliminary Studies of a Vaudeville Telepathist. Bulletin III, by S. G. SOAL, M.A., B.Sc., is published by the University of London Council for Psychical Investigation at 5s. This careful study shows that "Marion" discovers hidden objects by watching minute movements of members of the audience who know where the object is hidden, and recognizes cards if he has handled them by his very keen tactual sense, but that he cannot prove any capacity for true telepathy.

Preparations and Appliances

A "PIN" EYE-DROPPER

Mr. N. BISHOP HARMAN, F.R.C.S. (London, W.1), writes:

Oily preparations of alkaloids for the treatment of eye diseases are in many cases preferable to watery solutions.



Oily preparations keep better, and in some cases they are more effective—for example, eserine in castor oil in the palliative treatment of chronic glaucoma, or homatropine in refraction work. Oily preparations are perhaps less used than they might be owing to their messiness. This arises from too much being put into the eye by using a glass rod or dropper. The "pin" eye-dropper meets this difficulty. It is an ordinary domestic pin fixed in a suitable handle, and the whole chromium plated. If the head only of the pin be dipped into the oil it will lift a globule of the right volume, which by a touch on the mucosa of the lower lid is transferred to the eye. The dropper can be boiled. It is made by Messrs. W. Martindale of New Cavendish Street, London, W.1.

BRITISH MEDICAL JOURNAL
LONDON
SATURDAY DECEMBER 10 1938

HEALTH AND AGRICULTURE

The pre-eminent influence of food in determining man's general physical endowment, powers of endurance, and resistance to disease gives to efficient agriculture a foremost place among public health services. It was inevitable that those whose business lay in the investigation of the relations of food to health and disease and of the health-promoting properties of certain natural foodstuffs should have come to regard the proper care and cultivation of the soil and the economic production of health-giving foodstuffs as a most important public health measure. But the attempt to induce the public, the Government, and the farmer himself so to regard agriculture—and in consequence of this regard to establish it as part of a comprehensive public health policy—has been the business of others. Last year the League of Nations published the final report of the Mixed Committee, presided over by Viscount Astor, on *The Relation of Nutrition to Health, Agriculture, and Economic Policy*: a report replete with information on this highly important matter. In it there occurs a passage which cannot be too often repeated:

> "Millions of people in all parts of the globe are either suffering from inadequate physical development or from disease due to malnutrition or are living in a state of subnormal health which could be improved if they consumed more or different food. That this situation can exist in a world in which agricultural resources are so abundant and the arts of agriculture have been so improved that supply frequently tends to outstrip effective demand remains an outstanding challenge to constructive statesmanship and international co-operation."

Now there appears another report of an inquiry on British agriculture[1] organized by Lord Astor and Mr. Seebohm Rowntree which is of profound interest from the point of view of national health in this country. They set themselves the task of answering these questions: What can British agriculture produce most effectively and most economically, having regard to our soil, climate, and economic conditions? What does the consumer need most from British agriculture? They came to the conclusion that the best interests of the agricultural producer and of the consuming public coincide. The new knowledge of nutrition emphasizes the importance to human welfare of the consumption of adequate quantities of the "health-protective" foods as distinct from the energy-bearing foods. The main foods falling into this category are milk (pre-eminently), fresh fruit, vegetables, and eggs. And for the production of these Britain is especially fitted by natural conditions; and can be still better fitted, in regard to milk, by the application of the new knowledge now available for improving grassland cultivation. Moreover, British farming enjoys a natural protection in these perishable products through proximity to the market. "We should therefore aim at effecting a marriage of agriculture and nutrition by subsidizing the production of the protective foods rather than in giving subsidies to the production of energy-bearing foods. This policy would not only further the interests of agriculture in Britain but would also have an inestimable value on the standards of national health."

In practice, as the authors of the report point out, the central feature of a constructive nutritional policy must be the promotion of the consumption of milk. The potentialities of enlarging agricultural production by a successful policy of stimulating milk consumption are very large. The present average *per capita* consumption of milk by the British public is extremely low. If it were increased by one-third of a pint a day it would still be far below the level which is desirable on nutritional grounds; yet such an increase would entail an expansion of our natural milk output of no less than 65 per cent. At the present rate of productivity this would require the maintenance of 2½ million more cows. The authors of the report urge that the constitution of the marketing boards which administer the various statutory marketing schemes should be transformed. They recommend that these boards should be appointed by the appropriate departments of State to represent the public interest: a reform which, in their judgment, is essential if agricultural marketing is to evolve on satisfactory lines. "It would be far easier to develop constructive schemes for stimulating an increased consumption of milk and other protective foods, or for improving the system of retail distribution, if the powers of the marketing boards were in the hands of bodies representative of the public interest." With the other proposals here put forward we are not immediately concerned. State ownership of certain lands, land improvement commissions, measures for increasing farming efficiency, educational and advisory services, more energetic attempts to eradicate animal disease, improving the quality of the product in many branches of farming, measures to maintain and improve the fertility of the soil, improvements in conditions of

[1] *British Agriculture: The Principles of Future Policy.* A report of an inquiry organized by Viscount Astor and B. Seebohm Rowntree. (Longmans, Green and Co. 15s.)

life of agricultural workers—all these are among them. What concerns the medical profession as guardian of the public health is that agriculture should be given its rightful place among the public health services, and that the agricultural policy of the future should be part and parcel of a national policy of nutrition. The report by Lord Astor and Mr. Seebohm Rowntree will, by developing public opinion, contribute greatly to the attainment of this much-to-be-desired end.

RADIUM BEAM THERAPY

Of the many special reports which have from time to time been issued under the auspices of the Medical Research Council few have been so valuable and important as that on *Radium Beam Therapy*,[1] which has just appeared. As this method of treating cancer had already been successfully used in France, Belgium, the United States, and especially in Sweden, it was decided in 1933 to undertake systematic investigations in this country, and the Radium Beam Therapy Research was inaugurated. From the first it was decided that physical investigations must precede any clinical work, especially as regards the protection of patients and staff, as well as of other occupants of the building in which the work was carried out. Another direction in which exhaustive physical research was imperative was the effective and safe distribution of the dosage. In every form of radium therapy any errors, in either the quantity or quality of the radiations used, are serious and often irreparable; with the large masses of radium employed in beam therapy they are more than likely to be fatal. The clinical part of the work was put in charge of Miss Constance Wood, Mr. L. G. Grimmett, and Mr. T. A. Green, and it is a magnificent tribute to their knowledge and skill that, although the inquiry extended over four years and included the treatment of 366 patients, in no instance was there the slightest trace of accidental damage from radiation—either to the patients or to the staff. The radium employed was at first a unit of 5 grammes, but a further unit of 5 grammes was added subsequently. The greatest care had obviously to be taken in moving these large amounts, and a pneumatic transference device enabled the radium to be taken from the safe where it was kept and placed in the required position without any handling or exposure of the operators. The exact placing of the patient and the adjustment of the apparatus were all done before the radium itself was in working position. This enabled the necessary time and care to be given to the indispensable preliminary adjustments, as there was obviously no danger to anybody concerned in manipulating the uncharged apparatus. The amount of thought, care, and skill devoted to this and similar matters is beyond all praise.

It was decided from the first that these treatments should be confined to cancer of the mouth, tongue, larynx, and pharynx. In the first place these regions are easily accessible for inspection and treatment, and, in the second, surgery in order to prevail has to be of a very drastic character, and even then is often ultimately ineffective. Of recent years, since the development of radiotherapy, good results have been obtained by the interstitial use of small radium needles, but this means surgical intervention and considerable discomfort while the needles are in position. With beam radium therapy there is no surgery of access; the treatment is conducted externally, as with the *x* rays, and there is, of course, no discomfort arising from the presence of a number of inserted needles. It must, however, be understood that a certain amount of discomfort is inevitable during and soon after the treatment. Reaction of both skin and mucous membranes is bound to occur, but in general the patient's condition is much more comfortable than after interstitial radiation and incomparably more so than after the severe and permanently mutilating attempts of pure surgery to eradicate the growth completely. During the progress of each individual treatment every application of the unit is made by the radiotherapist, and the apparatus is kept empty of radium until all arrangements are complete. No one except the patient is present in the treatment room during the whole course of exposure; but communication between nurse and patient is rendered easy by an ingenious installation of microphones and loud speakers, while observation is conducted by the use of a system of periscopic mirrors. As the preface contributed by the Medical Research Council states:

"Of even greater importance than the actual therapeutic results so far recorded are the new technical methods which have been elaborated as the result of close co-operation between physicists and clinicians, and which are described in careful detail by the investigators concerned. The procedures used in this research, both for the treatment of patients and for the protection of the staff, should be applicable not only to radium beam therapy in its further evolution; they should be widely adaptable also to the needs and future developments of other types of radiotherapy for cancer. . . . The Medical Research Council have been impressed, moreover, not only by the high standard of work done under this scheme but also by the fact that the methods used are already serving as models to be followed elsewhere. They have accord-

[1] Medical Research Council. Report on Radium Beam Therapy Research, 1934–8. H.M. Stationery Office. 4s.

ingly accepted a proposal that they should assume chief responsibility for extending the research, and in this they are glad to be assured of continued co-operation by other bodies."

The general conclusions as to the value of this form of treatment are as follows. In cases in which the growth is early and localized its complete disappearance may be expected. When there is involvement of the lymphatic glands in close proximity to the original growth their enlargement can be made to disappear. Even with advanced stages of the primary growth and of local lymphatic involvement, in a small proportion of patients disappearance of the growth may occur; while in a large proportion many distressing symptoms are relieved. The report points out that, although it is too early to make definite pronouncements, it would appear that treatment of carcinoma of the mouth and throat by radium beam is at least as satisfactory as that by surgery or by interstitial radium therapy. And the results are obtained without mutilation of the patient. It has now been demonstrated that radium beam therapy, in competent hands, is a very valuable form of treatment. Further work is to be undertaken forthwith in which a 10-gramme unit will be applied to the treatment of cancer of the breast.

THE BLOOD TESTS BILL

Medical men who have studied the literature of blood grouping, and the use of blood tests in the courts of other countries for settling paternity disputes, are probably satisfied by now that the tests afford sound and valuable evidence. The rules for the inheritance of blood characters are proved beyond the shadow of a doubt, and pathologists who are familiar with the procedure regard it as one of the most reliable of all laboratory tests. The chief obstacle to the use of the tests in this country has been that the courts cannot order them to be made. As the tests cannot prove paternity but only, in certain cases, non-paternity, the mother has nothing to gain by acquiescing in them. Legislation is therefore necessary, and, after careful consultation with societies and individuals interested in the possibilities of the tests, Lord Merthyr has introduced a Bill into the House of Lords for the purpose of giving magistrates power to require a mother who asks for an affiliation order to undergo a blood test. The text of an official memorandum on the Bill is printed in our *Supplement* at page 362. It will probably come up for second reading soon after Parliament meets in the New Year.

The word "groups" is not mentioned in the Bill. The court may order blood tests, and these, as defined, include any tests made with the object of ascertaining the inheritable characteristics of blood. If the research workers in haematology some day develop a test which will disclose individuality of blood, as to-day it is possible to show individuality of a finger-print, the Bill will not shut it out. The court may order a test when it thinks fit, but the Bill obliges the court to order the man and the woman with her child to undergo a test if either of the parties requests it to do so. Normally the request will come from the man, but it would not be fitting to give one party a right by statute and withhold it from the other. The object of the test is to show whether the defendant can be excluded from being the father of the child—a cumbersome phrase, but one familiar to pathologists. If the woman will not consent to the test, the court may not order physical compulsion, but must dismiss her application. Its ordinary power to adjourn at will is saved, and so the court may give the parties time to consider their position.

The question of who shall perform the tests is of the greatest importance. Unless the work is kept in the hands of experts who are familiar with it, mistakes are bound to be made and this otherwise valuable source of evidence will be discredited. The Bill provides, therefore, that the tests shall be carried out by an "approved person" in accordance with rules. The approved persons are to be chosen, and the rules made, by the Lord Chancellor, who is the officer of State at present responsible for the appointment of magistrates and the procedures in their courts. In forming his panel of approved persons he is limited to registered medical practitioners who are competent to carry out blood tests, and he is required to consult the President of the Royal College of Physicians. The rules are to govern the whole conduct of the tests, including the taking, identifying, and posting of samples of blood, the form of certificate to be sent to the court, the qualifications of the pathologists and the scale of fees and expenses payable to them, and any other matters which ought to be laid down. The Bill has been drafted to give the Lord Chancellor as free a hand as possible, in the confidence that, if it became law, his Department would make the best possible arrangements for implementing its provisions. After blood specimens have been taken according to the court's order and to the rules, the pathologist shall—it is proposed—send a certificate of the result to the clerk of the court as soon as may be practicable, in the form laid down by the rules. It will be the duty of the clerk to supply copies to both parties, and at the adjourned hearing he is to produce the original certificate. In order to save prohibitive trouble and expense, the Bill here provides for an important exception to the ordinary

laws of evidence: that the certificate shall itself be evidence of the result without the pathologist having to appear in court and swear to its correctness. There is precedent for this provision in the Food and Drugs (Adulteration) Act, 1928, which lays down that in a prosecution for adulteration the certificate of the public analyst may be received in evidence without calling the analyst himself. The principle is that the analyst is presumed to be competent and impartial, and a pathologist who has been specially chosen by the Lord Chancellor's Department as competent to perform blood tests obviously has an equal, if not a better, stamp of reliability. Nevertheless, the Bill provides that the court, the mother, or the man may call the pathologist to give evidence, but a party who calls him may have to pay the costs. The court may order the payment of all or part of the costs out of what are called the "local funds"—funds already in existence for defraying the cost of the defence of poor prisoners.

A blood test can never prove that a man is the father of the child; all it can do is to exclude an innocent man in about one-third of the cases. When it does not exclude the man it has no evidential value at all, for it does not show any greater likelihood that he is the father; it merely shows that, in common with several million other men, he may be the father. A court which does not realize this fact may, however, be misled into thinking that, because the test shows that the man may be the father, it therefore in some way corroborates the mother's statement that he is the father. In some countries an inconclusive result is not allowed to come before the court at all. Those responsible for the Bill have felt, however, that an English court should be trusted with all the available evidence. The magistrates will therefore have the certificate before them whether it is conclusive or inconclusive, but the Bill provides that if the certificate is inconclusive neither party may comment on it. A notable omission is any provision directing the court to accept the result of the test. Once the certificate is before the court it has precisely the same value as any other evidence, and its value is for the court to decide. The Bill, therefore, provides that a man who desires a blood test may have it, but may have to pay the cost. It gives the court power to use, at its discretion and at the public expense, a source of evidence which has already been proved in many parts of the world to assist greatly in the proper decision of paternity disputes. At present the English courts (the Bill will not apply to Scotland) hear nearly 7,000 bastardy applications a year, but relatively few of these raise a doubt so great that a blood test is needed to settle it. During the first year there might be a fairly large number of applications for the test, but as the public became used to them, and as defendants realized that if they made a frivolous demand for the test they would have to pay, the numbers would soon settle down to a few hundred a year at most. They would perhaps be even less, because the existence of a reliable, if limited, means of disproving a false allegation of paternity would probably reduce the total number of applications for affiliation orders.

SEROLOGICAL DIAGNOSIS OF TYPHOID

Agglutination tests for intestinal infections have increased immensely in the refinement and complexity of their technique, and have gained correspondingly in significance. It is not long since the diagnostic importance of the O as distinct from the H agglutinin in typhoid fever was first generally recognized. A later development was the discovery by Felix of the Vi antigen and agglutinin, arising from the observation that recently isolated cultures varied in their agglutinability by an O serum: the degree of this agglutinability varied in inverse proportion to their virulence for mice. That this phenomenon is due to the existence of a distinct antigen associated with virulence is now generally accepted, and the consequences are important in two directions. Although the clinical evidence is not conclusive, there is good reason to believe that a therapeutic serum containing Vi as well as O antibody can influence the course of the disease, and such a serum is now available. The other direction in which these observations can be turned to account is that of diagnosis. Felix himself has recently asserted that the presence of Vi agglutinin is a certain sign of the carrier state. The significance of this agglutinin is made a good deal plainer in the paper by Major S. S. Bhatnagar, to be found at page 1195. He has made a study of its development in the course of the disease, and of its subsequent diminution, and it is clear that whereas other typhoid agglutinins persist for years after an attack the Vi agglutinin disappears from the blood almost as soon as the disease is over unless a carrier condition results: in that case Vi agglutinin remains in the blood just as long as living bacilli remain in the body. Another point brought out in this study is that in the previously T.A.B.-vaccinated individual who contracts typhoid Vi agglutinin is produced earlier and in greater amount than in the person who has not been inoculated: such individuals have a short and mild attack. It appears, therefore, that the presence of Vi agglutinin is the one and only certain serological sign of the presence of living typhoid bacilli in the body, whether during the disease or in the carrier: nothing can counterfeit it, neither a previous attack, vaccination, the anamnestic reaction, nor any other cause of positive reactions without active infection, such as may be obtained with other types of agglutination test. Bhatnagar has a further very practical contribution to make to this study in the discovery of a pure Vi strain of the typhoid bacillus.

This organism, if its peculiar character persists, is capable of much mitigating the technical difficulties of this study for anyone possessing a culture or securing suspensions of it, for even suspensions killed chemically have been found satisfactory, though for a few weeks only after preparation. Hitherto, owing to the instability of the Vi antigen, all this work has required the use of living cultures as agglutinable suspensions, a corollary to which is the freedom of stock sera from chemical preservative. Only a few laboratories have adopted Vi agglutination as a routine diagnostic method: it is safe to predict that many more will find it necessary to do so.

The typhoid bacillus has always been regarded as one and indivisible, a single entity from every point of view, and indeed in that sense an oasis of simplicity in the desert of complexity which constitutes the remainder of the enteric group and other species in the genus *Bacterium*. It is therefore somewhat alarming to read of the subdivision of the typhoid bacillus into seven "types." These, however, have been identified by Craigie and Yen[1] on the basis of susceptibility to different phages, an ingenious method for the ultimate pursuit of bacterial identity, and one the complexity of which in this case incidentally suggests doubts of the value of stock phages in therapeutics. The main interest of this method is epidemiological: thus of recent epidemics in this country that in Malton was due to Craigie's type F, Croydon to D_1, and Bournemouth to E. Such facts being known, further cases can be assigned with a fair degree of confidence to their presumptive source when the type of bacillus is ascertained and found to be the same as that in a contemporary or recent epidemic. These types are stable and a given typhoid bacillus can therefore be recognized, wherever it may have been between one case and another. This method promises in its authors' hands (for few others are likely to attempt it) to yield interesting information.

[1] *Canad. publ. Hlth. J.*, 1938, **29**, 448, 484.

THE PROBLEM OF THE PARTIALLY BLIND

An article with this title by Sir James Barrett in the *Medical Journal of Australia* shows the difficulties that arise so soon as some piece of beneficent legislation is established. The blind are blind and need help. Help is provided for them. Then the poor-sighted envy the new economic security of the blind and strive to get the same for themselves. The Royal Victorian Institute for the Blind pays inmates the difference between what they earn and the basic wage. The partially sighted claim the same assistance. The standard adopted is the British formula. Those who are unable to count fingers at a distance of one metre are totally blind; those with vision up to 3/60 are partially sighted; and those with vision between 3/60 and 6/60 are considered in association with other evidence, such as contracted fields of vision and nystagmus. The partially sighted assert in some cases that the sight they have is of no benefit in their work. Yet Sir James Barrett cites examples where this assertion is proved untrue. An albino with 6/60 in each eye and nystagmus could have been certified as blind, yet the man was brought up on a farm and managed it successfully. Sir James gives a list of cases where demands have been made for assistance, yet examination has proved the possession of effective or nearly normal sight. Some were cases of one-eyed persons whose remaining eye had normal vision. The moral is that no case should be certified for assistance as a blind or partially blind person without an examination by an ophthalmic surgeon.

SURGERY AND THE LIVER

In spite of careful pre-operative preparation and expert choice of anaesthetics there remain a proportion of surgical deaths, especially in jaundiced subjects, which are apparently due to liver insufficiency. Such fatalities as acute necrosis of the liver due to chloroform poisoning are of course well recognized, though luckily rare. In other cases, however, hyperpyrexia, oliguria, and a clinical picture resembling uraemia, ending in death, may follow not only operations upon the biliary tract but at times even quite "minor" surgical procedures. Such fatalities are sometimes spoken of as "liver deaths" or "liver-kidney deaths," and at necropsy some degree of hepatic necrosis is a usual finding. Some at least of the difficulties in the study of this subject, and particularly in guarding against such disasters in practice, arise from the lack of a reliable and at the same time relatively simple practical test of liver function. Before any operation, and equally before any anaesthetic, it is usual to examine the heart and lungs and test the urine, but there are few ways of testing the condition of the liver, which, in the absence of any special warning in the history, is often entirely ignored. It is, however, becoming now more and more the practice to give all patients, however slight the operation planned, additional glucose for some days before the anaesthetic. It is satisfactory to have further evidence[1] from Drs. F. H. Boyce and E. M. McFetridge that this measure is in fact effective. These workers have used a test of hepatic function which was first described in 1932 by Quick. The details of this test must be studied in the original papers, but it is sufficient to state here that it is based upon the excretion of hippuric acid in the urine after sodium benzoate has been taken by mouth. In spite of a number of objections to this test, common largely to all other tests of liver function at present available, it has given useful results, is easily carried out, and has already found a number of supporters. Employing it on a large series of subjects, Boyce and McFetridge confirm the value of pre-operative glucose and stress the fact that extra glucose is of real value during a fairly long period after operation. Much impairment of liver function, as shown by Quick's test, persisted in some of the patients tested for many days up to some weeks: in a certain number of cases the efficiency of the liver was more than halved after operation on the bile ducts. Anaesthetics administered to starved animals caused a much greater diminution in function than when given to well-fed animals. One important conclusion to which these workers came

[1] *Arch. Surg.*, 1938, **37**, 401.

was that the post-operative fall in liver function was greater after spinal anaesthesia than after either ether or ethylene, and they firmly believe that spinal anaesthesia is not the safe procedure it is supposed to be. Not all workers would agree with this conclusion, and in a recent paper Ravdin[2] and others consider that in the surgery of the bile ducts spinal anaesthesia is the method of choice. But at least these investigations have demonstrated the fall in liver efficiency after operations, and the importance of post- as well as pre-operative administration of glucose in even normal individuals undergoing even simple operations. With the Quick test Boyce and McFetridge have also shown a considerable diminution in liver efficiency in thyrotoxicosis and a still greater post-operative fall after thyroidectomy. It is to this severe fall in liver function that they attribute many of the deaths after this operation, especially in poorly prepared patients: again they emphasize the value and importance of massive glucose therapy before and after operation.

CHOLERA IN RUSSIA

An important contribution[3] has recently been made to the epidemiology and epidemiography of cholera as exemplified by its behaviour in Russia. The method of study adopted is more by way of the geographical and time relations of the several recorded outbreaks and their subsequent spread over the country than by the usual considerations of personal factors and mode and means of transmission. These topographical features are expressed by the word "geo-medicine," while the temporal elements are depicted by lines drawn on the map to represent the date of appearance of the advancing front of the epidemic, to which the term "isodates" is applied. A short review of previous contributions to the geographical study of this disease constitutes a preface wherein reference is made to the familiar dictum that "the movement of disease is from east to west against the rotation of the earth," and this is amplified by the observation that "the penetration of cholera is from east to west with distinct fading out the further westward it spreads," while the Elbe is cited as being the final barrier in its advance from Asia through Russia and into Germany. The first recorded outbreak of cholera in Russia was in 1823, when it appeared in the region of the Caucasus and Orenburg, but it did not then spread northward; in fact it was not until 1830 that an "all Russia" epidemic appeared. Since then Russia has experienced fifty-five "cholera years," but of these only thirteen can be regarded as "peak years," half of which could be designated as periods of limited or minor outbreaks only. Here it may be remarked that both morbidity and mortality are taken as indices of the character of the outbreaks so far as the statistics serve, and that reference generally is to European Russia, as the Asiatic part does not afford adequate records. In a series of eight "chartographs" the author illustrates his thesis by showing the "date lines" of the principal epidemics during the period in review. Of these the first (the epidemic of 1830) is the simplest to follow, for the lines spread fanwise in almost regular order across the country, closer together where progress was slow and widely apart where it was rapid. There is, significantly, a central invagination on the western side to indicate an area that remained free although almost surrounded by cases. In the following year there was an exacerbation of the epidemic, and here the lines are much contorted. Then came a period of minor outbreaks or of complete freedom until 1847 to 1849, when a major epidemic swept right across the country in regular waves. Subsequent major outbreaks in 1853, 1855, 1870, and 1871 do not show the same regularity of advance, the lines being in the form of whorls and wide sweeps. The author aptly compares these lines of advance to the ripples of a disturbed water surface, and the irregularities to intervention of obstacles or residual ripples from a previous disturbance. Thus a striking picture of the invasion is produced. The months of the year most favourable to spread were August and September, closely followed by July and October, while the first four months of the year showed a marked decline. In explanation of the irregular and at times anomalous behaviour of the waves, interference by residual waves of a previous invasion—that is, the protective effect of exposure to infection—is not considered as sufficient, and the theory is advanced that there are in different regions cholera vibrios of a different inner quality and also a winter-resting phase. Be that as it may, the author has succeeded in representing the epidemic invasion of an extensive area in a new and graphic way that sheds a broad light on the epidemiology of the disease. He does not claim thereby to explain the inner dynamics of infectious disease, but hopes that the further use of this method will bear fruitful results.

[2] *Surgery*, 1938, **3**, 805.
[3] *Z. Hyg. InfektKr.*, 1938, **121**, 1.

THE MEDICAL DIRECTORY, 1939

The ninety-fifth edition of the *Medical Directory*, published at 42s. by Messrs. J. and A. Churchill, contains more material than any of its predecessors, but further typographical revision has resulted in a saving of four pages, despite a net increase of well over a thousand entries. The numerical summary of the medical profession shows that the names now number 61,109, being 1,215 more than last year's figure. As usual, the largest part of the present increase (543) has taken place in the provinces, which now contain 26,093 medical practitioners. In London there has been an increase of 159, in Scotland 208, and in Ireland 104. Entries under "Abroad" have grown by 228, while the numbers in Wales and in the "Services" section remain almost stationary. The time is long past since the *Medical Directory* needed an introduction to any member of the profession it serves so admirably. All we are called upon to do, year by year, is to take a few soundings and assure ourselves that the new edition is up to the high standard which the publishers have maintained from generation to generation. We find no falling off in the 1939 edition. It appears to be as accurate and up to date as care and intelligence can make it.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

MANIPULATIVE SURGERY

BY

GEORGE PERKINS, *M.C.*, F.R.C.S.

The indications for manipulative surgery may be considered under the following headings: (1) To reduce a dislocation. (2) To unlock a joint. (3) To increase the range of movement at a joint. (4) To alter the arc of movement at a joint. (5) To render muscle contraction painless. (6) To render painless the movements of a "normal" joint.

To Reduce a Dislocation

No one readily associates the reduction of a dislocation with manipulative surgery, although that and also the reduction of a fracture should be included under this heading. Curiously enough, patients do not consult an unqualified manipulator for an obvious dislocation, and yet prefer him to a doctor if they think they have "a bone out of place." The quack professes to be able to detect by palpation a minor displacement which cannot be demonstrated by *x* rays, and he even claims to do this with reference to an intervertebral joint. No medical man can accept this absurd hypothesis. I do not believe in the existence of a minor degree of displacement; either a joint is in position or it is obviously dislocated. And while allowing that the quack's treatment is often of value, I strongly maintain that his explanation is balderdash. This point is discussed later.

To Unlock a Joint

Manipulation of a joint for the purpose of dislodging something that has become jammed between the articular surfaces is a familiar procedure, and therefore need not be referred to at length. The knee-joint is far and away the commonest to be involved, and the locking is caused either by a torn and displaced portion of semilunar cartilage or by a loose body.

A few points are worth mentioning. The joint easily frees itself if it can move freely. Often the muscles will not relax because of pain. Even so, the patient can sometimes unlock the joint himself by moving it in the direction in which movement is unimpeded. For instance, if he flexes his knee fully—making the calf touch the thigh—he can reduce a displaced cartilage, whereas attempts to force the joint into extension fail. However, on account of the muscle spasm an anaesthetic is usually necessary. It should be realized that the anaesthesia is more important than the doctor's manipulation, and must be deep enough to relax the muscles. Nitrous oxide is seldom sufficient. The manipulation consists in moving the joint, which should be quite lax, through its full range—flexion, external and internal rotation, and extension. Occasionally reduction is audible. Sometimes one is in doubt whether unlocking has been effected until the patient recovers consciousness. He then soon settles the matter: it is quite obvious to him if the joint is free. If he is in any doubt one may be certain that reduction has not occurred.

Unlocking a joint by manipulation is not a cure: the disability is only temporarily removed. The article will surely jam again if it is a loose body, and almost surely if it is a torn cartilage. The joint is not restored to normal until the substance causing the jamming has been taken away by operation.

The diagnosis of a locked joint is not always simple. In the case of the knee, for example, extension may be limited by pain. Mechanical interference with movement is probable, however, if movement in the opposite direction—namely, flexion—is nearly full. If flexion is grossly limited as well as extension the probability is that the movement is being prevented by pain. The ski-ing knee is a case in point. Needless to say, manipulation does not restore movement if the restriction is due to the pain of a recent injury.

To Increase Range of Movement at a Joint

One might suppose that diminished movement at a joint would be, above all others, the indication for manipulative surgery. The medical man is under the impression that this is the type of case chosen by the bone-setter for manipulation. One such—a stiff hip following a dislocation treated by plaster-of-Paris fixation—was rejected by Sir Herbert Barker as unsuitable when he was selecting the patients on whom to demonstrate before the British Orthopaedic Association two years ago. Joints with limited range due to many causes are indeed unsuitable; such, for example, as incongruous joint surfaces, muscle spasm in the presence of active arthritis, sclerosis of capsule as a sequel of arthritis, adhesions between articular surfaces, myositis ossificans—of which none is improved and some made worse by forced movements. But loss of joint movement due to three causes is suitable for treatment by manipulation—namely, (1) loss of elasticity in the muscles caused by the immobilization of a normal joint; (2) loss of elasticity in muscles caused by prolonged stretching as a result of paralysis of their antagonists; and (3) loss of elasticity in the capsule caused by senile changes.

LOSS OF ELASTICITY IN MUSCLES CAUSED BY IMMOBILIZATION OF A NORMAL JOINT

The loss of movement that is the sequel of splinting a normal joint is due to the loss of the normal elasticity of muscle. Muscle shortens and lengthens: both attributes are of equal importance. Muscle that is deprived for a time of the opportunity of lengthening quickly loses this power. The shortened muscles can be gradually stretched by forcing movement at the joint over which the muscles play. The fact that the force appears to be exerted on the joint should not confuse the issue: it is not inelastic joint capsule but inelastic muscles that require the stretching.

Forced movements designed for this purpose should be repeated, and gradual improvement be obtained little by little. Under anaesthesia the joint is forced by the doctor as far as possible in every direction, and on succeeding days a masseuse repeats the stretching movements until no more improvement is seen. Another forced manipulation under anaesthesia is then undertaken by the doctor and similar after-treatment given by the masseuse. The process takes time. The doctor employs great force, and there is a risk of fracture, especially in the case of the knee-joint. The femur can be safeguarded by pressing the thigh down on to the couch while the leg below the knee

projects beyond the edge, but the force exerted may snap the patella instead of stretching the thigh muscles. This type of joint stiffness is frequent after fractures.

LOSS OF ELASTICITY IN MUSCLES CAUSED BY PROLONGED SHORTENING AS A RESULT OF PARALYSIS OF THEIR ANTAGONISTS

This is commonly seen as an aftermath of acute anterior poliomyelitis; and also at the shoulder-joint after a birth palsy, where owing to unopposed action the internal rotators and the adductor muscles lose their power of lengthening and prevent external rotation and abduction at the shoulder. Freedom of movement can be restored by stretching the shortened muscles under anaesthesia. Afterwards, however, the joint must be splinted in a position opposite to the initial deformity until the overstretched muscles have recovered their power. The splint may with advantage be removed once a day and the joint put through its full range passively.

LOSS OF ELASTICITY IN CAPSULE CAUSED BY SENILE CHANGES

In osteo-arthritis there is loss of joint movement, and often it is the most useful movement that is lost. With osteo-arthritis of the hip, the hip cannot be put into abduction and extension, the usual position of the joint when standing. Similarly, in osteo-arthritis of the knee extension is lost. It is often possible to increase the range of movement in an osteo-arthritic joint by stretching the capsule under anaesthesia. Great force may be used, and the increased range maintained afterwards by exercises.

To Alter Arc of Movement at Joint

Although it is usually not possible to increase the range of movement of a joint in which as the result of an arthritis the capsule has become sclerosed, it is often possible to alter the arc of movement. This is a valuable procedure in rheumatoid arthritis, particularly at the knee-joint, where, when the acute infection has died down, the range of movement is perhaps 60 degrees—from 160 to 100 degrees. This can be changed into movement from 180 to 120 degrees: the extra 20 degrees of extension is of great value from the point of view of function.

Under full anaesthesia the knee is forcibly straightened, with palpable tearing of soft structures at the back of the joint. The knee may be painful afterwards—it often is not—and as a precaution a removable plaster-of-Paris splint is applied while the patient is still under the anaesthetic. On the day following the patient is encouraged to bend the knee. Gradually, day by day, more and more controlled flexion is obtained. The removable plaster-of-Paris is retained until the patient, when free of the splint, can lift the leg with the knee fully extended.

To Render Muscle Contraction Painless

If, while a muscle is strongly contracted, an external force moves the joint in the opposite direction the muscle apparatus is liable to be damaged. Often it is the tendon that tears—for example, rupture of the tendo Achillis: if the tendon resists, the force takes effect at the point of attachment of the muscle to bone, and a few fibres are avulsed. The usual treatment prescribed is rest to the damaged muscle. This is thought to be reasonable by the patient, especially as it makes him comfortable. When, however, the damage has been repaired and he begins to use the muscle again, he has pain, because the muscle as it contracts pulls on the scar. The condition is cured by stretching the affected muscle under anaesthesia. After-treatment is important: unless the patient maintains the stretching afterwards by active exercises the manipulation fails. He should be warned of this and be told that he must persevere in spite of discomfort. Two common examples are rider's strain and tennis elbow.

RIDER'S STRAIN

The horseman descends awkwardly on to the saddle while the adductors are strongly in action, and tears a few fibres of the adductor muscles at their origin from the pubic bone. When after a few weeks' rest he again attempts to ride he is annoyed to find that he still feels pain in the groin. On examination the pubic bone at the site of origin of the adductors is tender, and passive abduction and active adduction are both painful. Under anaesthesia the hip is forcibly abducted, and afterwards the patient is taught to straddle. Faradic stimulation of the adductors is also given.

TENNIS ELBOW

This very common and annoying disability is caused by other activities as well as by tennis. At tennis it is due to a failure to follow through when playing a backhand shot. At the moment when the wrist and elbow are being extended by the extensor muscles of wrist and fingers the ball hits the racket and suddenly checks the extension movement, and the extensors of the wrist and fingers are damaged at their point of origin from the neighbourhood of the external epicondyle.

The patient usually consults a doctor after some weeks or months of discomfort. He complains that he cannot play tennis, and has pain when making certain movements with the hand. On investigation it is found that all these painful movements involve extension of wrist and fingers. There is tenderness over a small area about the external epicondyle, elbow movements are full and painless, and active extension of the wrist, and particularly of the fingers against resistance, is painful.

The condition should be, in theory, as simple to treat as the rider's strain: but whereas it is easy to stretch the abductor muscles of the hip it is difficult to stretch the extensors of wrist and finger. However, manipulation of the elbow under anaesthesia frequently results in cure. The aim is to hinge the extended elbow forcibly ulnarwards. Every manipulator, however, has his own methods, and it is possible that several are equally effective in exerting traction on the scarred area. Vigorous faradism to the extensor group and exercises are advisable afterwards. The patient may feel little or no benefit for the first week: thereafter the discomfort gets progressively less.

To Render Movements of "Normal" Joint Painless

This sounds an absurdity; but it expresses exactly what unqualified manipulators do in most instances. They may call themselves bone-setters or osteopaths, or something else, and each advances a different explanation for the success of his treatment: but in the main the treatment is the same—namely, manipulation. That it may be done once or many times, and may be vigorous or gentle, does not alter the essence of the treatment, which is forced movements of a joint.

It is idle to deny that success often follows this treatment; nor do I think it fair to assume that the successes are all in patients whom we should label functional. I believe that it is a valuable form of treatment and one which the medical man should not despise. Let us consider the symptom and sign of a case suitable for this treatment, and then attempt to give an explanation of how it acts.

The symptom is pain on use, and is often referred, which makes it difficult to know what joint is at fault. The sign is a joint that on examination is often normal. There is no evidence of inflammation, no heat, no swelling, and the range of movement may be full and painless. The only positive signs (and these may be absent) are a local tender spot somewhere on the joint line, and pain on forcing movement to the extreme in one or more directions but not in all. If movements in all directions are painful, manipulation is not likely to be curative. The more normal the joint appears the better the prospect of cure. Of course, the joint cannot in reality be normal, and often a skilful observer will detect some movement that is painful when a casual observer would find nothing abnormal on examination. Sometimes the most careful examination reveals nothing, and the patient has pain only when he is bearing weight through the joint; this occurs in the foot particularly.

Now for the explanation. The bone-setter's explanation is satisfactory from the patient's point of view, but it is unconvincing to a medical man. Indeed, the claim that a bone has been replaced has, I think, mitigated against acceptance of the value of the treatment. The doctor wants to know what bone has been replaced, and wants to see it demonstrably out of position in a radiograph; and not being satisfied on these two points he is apt to dismiss the treatment as too much allied to quackery to be used by any honest doctor. A more reasonable explanation is that the manipulation restores free movement, which beforehand was interfered with by adhesions. The public are being educated to this point of view. The adhesions result presumably from scar tissue formed in the process of repair of a small injury.

The manipulation is painful, and for the comfort of the patient is better done under anaesthesia, which has the additional advantage that the doctor can proceed with leisure, can test all movements, and need not be content with the one movement that he thinks is the source of the pain. Evipan, and better still pentothal, are excellent because they give complete muscle relaxation.

The technique is simple: the joint is moved fully throughout its range. No skill is required in the actual manipulation, but a knowledge of the normal movements of the joint is essential. The bone-setter, ignorant of anatomy, paradoxically often has the advantage over the doctor, who knows the shape of the bone ends and thinks he knows the normal range of movement; for it is often the small movements ignored by the anatomist that are the most important. For example, we think of the elbow as a pure hinge-joint and neglect longitudinal distraction of the joint surfaces, backward, forward, and sideward movement of the ulna on the humerus, and lateral hinge. The bone-setter is inclined to treat it as a universal joint, and his manipulation is often the better for his "ignorance." I do not want to suggest that all bone-setters are ignorant of anatomy. Many of them are highly intelligent and have studied joint movements, but their knowledge has been gained on the living subject and not in the dissecting-room. A difficulty sometimes arises because it may not be obvious from which joint the pain is referred: that bone-setters themselves experience this is suggested by their frequent diagnosis of two bones out of place—for example, one in the elbow and one in the wrist, necessitating manipulation of both joints.

After-treatment is important. Unless the movements freed by the manipulation are kept free the adhesions will re-form. For preference, the patient should be seen daily by the doctor or be put under the care of a masseuse: one or other of them sees that the patient retains full movement, and it is advisable to prescribe exercises that will ensure this. The bone-setter has this advantage over the medical man—that the patient has prescribed his own treatment; and because he believes that as a result of the manipulation he will be at once cured he is prepared to use his joint normally afterwards: he expects to rise, take up his bed, and walk. The patient has more faith in the manipulation of a bone-setter than he has in the manipulation of a doctor. This being so, it is as well to explain to the patient the nature of adhesions and the likelihood of their re-forming unless he perseveres with full movements afterwards.

Conclusion

To sum up, manipulation for pain with little or nothing to show for it is not a quack treatment; and all honour is due to those unqualified practitioners who have drawn the unwilling attention of the medical profession to a valuable form of therapy. Manipulative surgery should not, in my view, be confined to the province of a specialist, but should be among the armamentarium of the general practitioner.

BRITISH EMPIRE CANCER CAMPAIGN

FIFTEENTH ANNUAL MEETING

The annual general meeting of the British Empire Cancer Campaign was held at the House of Lords on November 29, the DUKE OF GLOUCESTER presiding. His Royal Highness began his address with a reference to the British Government's intention to provide facilities for the early diagnosis, treatment, and after-care of cancer patients. He read a message from the Minister of Health, which stated:

"More than ever will the work of your organization be needed, both in regard to research into the causation of the disease and in carrying out propaganda to impress upon all concerned the desirability of seeking advice in the earliest stages."

The Duke went on to refer to the efforts made by the Campaign, particularly during the past year, to place clinical cancer research on a sound and organized basis. The investigation which has been planned will cover yearly about 17,000 fresh cases of cancer in the metropolitan district. After mentioning the educational propaganda, to which a specially produced sound film is shortly to be added, and the gift of 250 guineas by the Corporation of the City of London to mark its appreciation of the work of the Campaign, the Duke referred to the fact that, with the approval of the authorities at the University of Oxford, a new cancer research centre of the Campaign is about to be established there, and a number of those holding scientific professorial chairs have joined a committee to promote the work. "I hope that Cambridge University may also find it possible to establish a similar research centre, and that these two ancient homes of learning may vie in friendly rivalry for the honour of making further discoveries in the crusade against cancer."

A vote of thanks to the Duke of Gloucester was carried on the motion of Lord HAILSHAM, who in the course of further proceedings was re-elected chairman of Grand Council.

Wide Range of Research

Sir ALFRED WEBB-JOHNSON, in proposing for adoption the annual report, referred, as the Duke also had done, to the admirable work of Mr. Lockhart-Mummery, its editor for fifteen years. It was with the greatest satisfaction, said Sir Alfred, that they saw the Government taking steps to remove the haunting fear of cancer, and providing funds in order to bring within reach of all the

special methods of investigation which might ensure early diagnosis, and the elaborate means of treatment which held out good prospects of cure. Successful treatment might be planned without knowledge of the cause of a disease, but in order to devise means of prevention it was essential that the cause should be known. The report brought home the intense effort being made to shed light on this problem.

"The range of experimental investigation requires the labours of chemists, physicists, biologists, eugenists, physiologists, and pathologists—and all of the highest calibre, for the real talent for research is possessed only by a few. Specialists have to be engaged on different lines of investigation, for to make progress in this complex subject specialization is imperative. From the enormous accumulation of details the truth must be demonstrated by some rare genius with a faculty for seeing the hidden relations between various phenomena. I believe some man of genius with a wide biological outlook and creative imagination will eventually indicate the line leading to the solution of this problem."

He added a few remarks on the cyclotron, the invention of Lawrence of California, whereby neutron rays can be concentrated on a tumour or the neutrons fired at various chemical atoms, so that the resulting radio-active atoms may, according to their chemical composition, have a selective action on the cells of tumours. The cyclotron cost about £30,000. One was installed at Cambridge and another at Liverpool, but it was of urgent importance that at least one should be available in London so that clinical trial could eventually be made of the therapeutic value of neutrons. He said "eventually" because first of all the physical side of the experiment must be ensured. Unless there was a proper scientific foundation the clinical trial would be beset with uncertainties and dangers.

Finance of the Campaign

Lord WARDINGTON, chairman of the Finance Committee, said that although last year a deficit was anticipated, such increased financial support from the public had been forthcoming that it was possible not only to balance the budget but to show a surplus of some £800. The Campaign's income totalled over £79,000, compared with £67,000 for the preceding year. On the expenditure side, grants of nearly £43,000 had been made to hospitals and individual research workers, and £6,000 towards the work of educational propaganda and the special clinical cancer research already mentioned. This total expenditure on research represented an increase of nearly £14,000 on the previous year, and nearly £30,000 on the expenditure of ten years ago. Assurances had been given to the Ministry of Health, at its request, that the Campaign and other research organizations would not only continue but intensify their efforts to gain as much knowledge as possible of the cause of the disease. A further increase in expenditure was therefore to be anticipated. The Government's proposals would not relieve the Campaign of any part of the cost of its cancer research work; it would be most unfortunate if a wrong impression got abroad that the State was now proposing to finance cancer research.

At the meeting of Grand Council which followed, Lord Dawson and Sir Cuthbert Wallace were re-elected vice-chairmen, Sir Kenneth Wigram was elected a member of Grand Council, and Professor E. C. Dodds a member of the Executive Committee.

Annual Report

The annual report which was approved at the meeting embodied as usual the statements by the various institutions and individuals working under the aegis of the Campaign in this country and the Dominions. A vast amount of interesting detail is given from which a few distinct lines of progress can be discerned. Further study has taken place on the tumour-producing agents of the filterable fowl sarcomata; improved methods of obtaining large quantities of purified suspensions of these particulate agents have been employed in serological work. Tumour immunity, tumour metabolism, and the mode of action of cancer-producing compounds continue to interest workers in several centres. Increased knowledge has been gained as to the types of substitution which lead to cancer-producing activity in the benzanthracene hydrocarbons. On the subject of hormones, the influence of testosterone propionate and similar preparations in cases of chronic mastitis has been investigated. The results with testosterone are encouraging, but not up to the present those with oestrin injections. Reports from many centres are forthcoming on the physical and biological effects of *x* rays and radium, and to this has been added research on short wireless waves and their heat production in the tissues. Some clinical work was undertaken at Newcastle-upon-Tyne in the hope that the temperature of a patient might be kept sufficiently high for a long enough time to destroy generalized metastases, but no cure has been effected in four advanced cases which were submitted to the experiment. There are some grounds for the belief that heat produced by short wireless waves may have a selective destructive action on certain malignant tissues, but up to the moment it is not possible to arrive at conclusions. The biological effects of neutrons are also being actively studied and compared with those of *x*-ray and gamma-ray energy. Mr. Lockhart-Mummery in his foreword says:

"It would seem that in future the study of growth-stimulating and growth-inhibiting substances is likely to be a profitable field of research. Little is known about such substances at present, and many difficulties must be removed before advance along this path is attained. No one can say by which path the final goal will be reached, nor when the secret [of the causes of cancer] will be found. In the meantime we push on with courage and with confidence along every path which seems to lead to the discovery."

RADIUM POLICY AND PRACTICE

THE COMMISSION'S REPORT

Two features in the ninth annual report of the National Radium Trust and Radium Commission[1] are of particular interest and importance. The first is the extension of treatment by "radium beam therapy," which has been rendered possible by the provision of a second 10 grammes of radium. The necessary equipment has been installed and is in full working order at the following centres:

Aberdeen Royal Infirmary	1	gramme
Birmingham General Hospital	3	grammes
Bradford Royal Infirmary	2	"
Edinburgh Royal Infirmary	3	"
Glasgow Western Infirmary	3	"
Leeds General Infirmary	2	"
Sheffield Royal Infirmary	2	"

The extension of beam therapy was foreshadowed in last year's report, and has been made largely as a consequence of the encouraging results obtained by the Radium Beam Therapy Research, whose latest report is discussed elsewhere (p. 1209). Owing to the excellent pioneer work of that body, not only in standardizing apparatus but in evolving suitable protective devices for workers as well as patients, this latest development of radiotherapy has now passed the experimental stage and become established as a routine procedure in certain types of cancer. Several years must of course elapse before any statistical evaluation of results is possible, but the results hitherto obtained are in the highest degree encouraging.

[1] *Ninth Annual Report of the National Radium Trust and the Radium Commission, 1937–8, including a Statistical Report.* London: H.M. Stationery Office. Cmd. 5883. 1s.

The second point of special interest deals with the question of the organization of a national cancer service, and almost coincidently with the publication of the Commission's report a Bill dealing with the subject has been introduced into the House of Commons by the Minister of Health.

Cancer Treatment at Large Centres

The importance of treating cancer at large centres is strongly urged by the Commission, and it is a point which should be obvious enough to all who give the subject impartial consideration. One function of the largest of the centres should undoubtedly be to provide facilities for instruction in the early signs and symptoms of the disease. Treatment to be effective must be early, as has been repeatedly urged in this *Journal*; and systematic instruction in the recognition of neoplastic diseases in their earliest stages is of vital importance. Such knowledge as this can only be obtained at institutions where a sufficiently large number of patients is collected.

Among the causes which hindered the establishment of an efficient national service in the past has been the acquisition of inadequate quantities of radium by small hospitals not working in co-operation with any recognized centre; and the same may be said of the private ownership and therapeutic use of small amounts. In both cases the objection is the same. Radium treatment to be effective needs in the first place to be in the hands of experts who devote the whole of their time to radiotherapy; it is in no sense a "side line" or a mere casual adjunct to surgery. In the second place the supply of radium available for the treatment of any particular case must be such that the patient receives neither more nor less than the optimum dosage with regard both to amount and distribution. Beyond all this it must be remembered that in many cases treatment by high voltage *x* rays is an indispensable adjunct to treatment by radium. For these reasons the indiscriminate supplying of radon or the hiring of radium needles to non-experts seems a most undesirable procedure, and the Radium Commission, in collaboration with the Medical Research Council, is doing valuable service to all concerned by insisting upon centralization as an essential to success.

Strenuous efforts are being made to explore the possibilities of forming centres at Cambridge and Oxford. In view of the extraordinarily high quality of the research work upon the biological effects of radiation which is being carried out at the Strangeways Laboratory, Cambridge, the establishment of a clinical centre seems a matter of the greatest importance. The physical and experimental facilities are unrivalled, and it is to be hoped that the formation of a therapeutic centre in the near future will give practical expression to the ever-increasing developments of experimental radiology. At Oxford negotiations with the Nuffield Committee for the Advancement of Medicine are in progress, and although the immediate establishment of a national centre does not seem possible, a move in that direction has been made by an application for the loan of radium for gynaecological purposes.

Arrangements for Radium Therapy

The conditions regarding possible arrangements for radium therapy throughout the country are being thoroughly investigated by the Commission, and the conclusions reached will doubtless be of fundamental importance in forwarding any Government measures that may be taken towards the setting up of a national service. So far as can be seen the suggestions at present set forth coincide very closely with the declared aims and objects of the Commission from its beginning until the present time.

During the past year representatives of the Commission have visited many of the centres and are able to report that all of them show a steady development of radiotherapy. This is in all respects a testimony to the valuable work which has been and is being done. Not less important is it to realize that for the efficient carrying out of a national campaign against cancer the co-operation of the general practitioner is essential. How this is to be secured is a matter for careful consideration, but obviously adequate instruction in the recognition of the earliest signs and symptoms is the first step towards obtaining a reduction in our high cancer mortality.

ROYAL AUSTRALASIAN COLLEGE OF PHYSICIANS

At the inauguration of the Royal Australasian College of Physicians at Sydney on December 15 the Royal College of Physicians of London will be represented by Dr. H. Morley Fletcher, formerly Senior Censor. It will be recalled that in the delicate work of drafting its constitution the founders of the new Australasian College took full advantage of the assistance afforded by the London College, with its wealth of experience and four centuries of tradition. The London College is therefore pleased to receive an invitation to send a representative to the opening ceremony.

Address from the London College

His Excellency the Governor-General of Australia, supported by the Prime Minister, will open the proceedings, and Dr. H. Morley Fletcher will present the following Address:

"To the Royal Australasian College of Physicians.

"We, the President and Fellows of the Royal College of Physicians of London, desire to send to the Royal Australasian College of Physicians our fraternal greetings and our hearty congratulations upon its successful inauguration. We have watched with much sympathy the steps that have been taken to bring the new College into being, and have regarded it as a privilege to put the long experience of our own College at the disposal of its founders. We do not doubt that the establishment of the Royal College of Physicians in Australasia will not only promote learning and good fellowship amongst physicians in that part of the Empire but will also be in the highest interests of medical science and practice.

"Along with this Address we have great pleasure in presenting the new College with a replica of our ancient caduceus, one of the insignia of office of our President. In the words of the original designer, Dr. Caius, 'the silver rod indicates that the President should rule with gentleness and clemency unlike those of old time who ruled with a rod of iron.' The serpents, the symbols of prudence, teach the necessity of ruling prudently, while the Arms of the College placed on the summit indicate that gentleness and prudence are the means by which the College is sustained.' We are confident that the Royal Australasian College of Physicians will always be guided by these principles, and we cordially wish for it a long, useful, and prosperous existence."

Dr. Morley Fletcher will address the assembly on "Medicine—Past and Present," and, in addition to presenting the caduceus, will offer as a gift to the Library of the new College handsomely bound copies of Harvey's *Prelectiones Anatomiæ Universalis* and *The Roll of the Royal College of Physicians of London.*

The December issue of the *Practitioner* has a number of articles specially devoted to "cold weather ailments." These include articles on the treatment of pneumonia by Dr. G. E. Beaumont, on chronic bronchitis by Dr. F. H. Young, on the clinical aspects of influenza by Dr. J. S. Scadding, and on vaccines and the common cold by Dr. Dennis Embleton.

Reports of Societies

TERMINAL DISINFECTION AND EXCLUSION OF CONTACTS FROM SCHOOL

At a meeting of the Fever Hospital Medical Service Group of the Society of Medical Officers of Health, with the vice-president, Dr. E. H. R. HARRIES, in the chair, a discussion took place on terminal disinfection and the exclusion of contacts from schools.

Dr. DUNCAN FORBES said that the discovery of the diphtheria carrier, and of mild cases of scarlet fever which were often overlooked, and the demonstration of the carriage of infection by spray gave good ground for the belief that apparently healthy carriers were the chief cause of spread in scarlet fever and diphtheria and that fomites played a negligible part in the spread of infection. It was on these grounds that in Brighton the old orthodox disinfection, first of mattresses and bedding in 1910 and later by spraying in 1921, was abandoned and the "spring clean" substituted. The "spring clean" consisted in the boiling of sheets and pillow-slips, the washing of blankets, the dusting of bedrooms, and the scrubbing of floors. It was important that the inspector should see that this "spring clean" was actually carried out, as, although it did not sterilize, it must reduce the amount and vitality of any lingering infection.

Statistics published by the Ministry of Health (Public Health and Medical Subjects No. 35) proved that the difference in results between orthodox disinfection and the "spring clean" was inconsiderable, and the added cost of orthodox disinfection was not justifiable in any but exceptional conditions. In order to allay anxiety a full disinfection after scarlet fever was still carried out in certain circumstances—for instance, if the mother was in an advanced state of pregnancy, in hotels and boarding houses, and in the homes of dairymen. After the "spring clean" had been tried out in scarlet fever and diphtheria it next replaced disinfection after cerebrospinal fever and pulmonary tuberculosis: in the former because of the known rapid death of the meningococcus after it left the body; in the latter because the usual mode of infection from persons suffering from pulmonary tuberculosis was by direct spray infection.

Exclusions from School

Home contacts after measles had not been excluded from school in Brighton since 1922. The reasons for this were (1) that such exclusion after the first crop of cases did not prevent a general infection of the school; and (2) that home contacts when excluded played with and infected neighbours' children who were at an age when the case mortality was high and who could not have the offer of any prophylactic injection of adult serum which home contacts of school-infected cases had. Chicken-pox contacts were not excluded because it was a real asset to get the attack over in childhood. With regard to scarlet fever, since 1932, whether the patient was removed to hospital or isolated at home, school contacts had been excluded for one week only without any apparent ill-effects; in Brighton 55 per cent. of scarlet fever cases were now nursed at home. An appeal was made for the early revision of the 1927 *Memorandum on Closure and Exclusion from School*, which, while claiming to be only advisory, really governed the practice of most education authorities.

Ritual Disinfection

Dr. A. TOPPING said that terminal disinfection was a survival from very early times when, there being complete ignorance of how infection was spread, herbs and other materials, foul or sweet-smelling according to taste, were burned to combat miasmata or pest-bearing emanations. It was understandable then, just as was the practice of displaying a bunch of hyssop on the magisterial bench as a means of protection against typhus, but it was difficult to understand its persistence in our enlightened age. It was known that the organisms responsible were extremely short-lived outside the human body and that infection did not normally lurk behind picture rails or in the depths of a mattress but was almost invariably due to the direct passage of the causative organism from the throat and nose of a sufferer or carrier to those of a susceptible contact. Yet in deference to a completely uninformed public opinion the hoary witch-doctrine type of ritual connoted by terminal disinfection was continued. No matter how convinced he might be of the folly of the approved hocus-pocus, no medical officer could be blamed for playing for safety if he knew that he would be criticized if a second case arose and he had not burned his votive sulphur candle or sprinkled chloride of lime round the gullies—yet for more than forty years writers on public health had praised with faint damns, or had actually decried, routine terminal disinfection.

In America terminal disinfection had been almost completely discontinued, and there had been no evidence whatsoever of any corresponding increase in incidence. In this country several medical officers of health had to all intents and purposes abandoned it with excellent results. Dr. Duncan Forbes led the way in Brighton and had no cause to regret his action. The medical officers of many provincial towns and of certain metropolitan boroughs had followed suit, and instead of any increase in incidence of infectious disease there had been, in many instances, an actual diminution. Thirty years ago Dr. F. H. Thomson, then medical superintendent of the North-Eastern Hospital, discontinued any disinfection of wards changing over from one disease to another; a thorough washing, full free ventilation for only six to eight hours, and change of bedding were all he insisted on. His results continued to be at least as good as they had been when the full ritual was carried out. Another senior medical superintendent followed this example, but he countenanced the waving of a sulphur candle so that, on questions being asked, he could say that disinfection had been done!

No one could deny that under certain circumstances micro-organisms—for example, the haemolytic streptococcus—might survive for considerable periods outside the human body and occasionally retain their pathogenicity. Recent experiments by Dr. White at Queen Charlotte's Hospital showed that they could be recovered from dust; the moral was obvious, and there was no better way of removing dust than by a liberal use of soap, water, "elbow grease," and free full ventilation. The streptococcus which survived this for twenty-four hours must indeed be a stout fellow, and the odds against his being laid low by a variable concentration of sulphur or formalin fumes would be very heavy; even if entrenched in saliva or mucous discharges the streptococcus could not resist direct applications of soap and water. As regards bedding and other fomites, his opinion was that, as in the case of rooms, the high standard of disinfection normally prescribed was not justified by our knowledge of the viability of the organisms and the modes of transmission.

It is not normally necessary to subject mattresses to steam disinfection. Unless the organisms soaked into the depths in the patient's discharges it was difficult to visualize how it penetrated nightgowns, draw sheets, sheets, mackintoshes, and ticking. It was just as difficult to see how it found its way out and retained enough vitality to cause disease. When it was remembered that myriads of these same organisms were living in rude health in the throats and noses of people met in normal life it seemed somewhat supererogatory to spend money, time, and trouble in ruining mattresses on the off-chance that some

emasculated little orphan had found its way into their recesses. Where, for any reason, steam disinfection was really indicated, it should be reasonable. There was no justification for applying the standard necessary to kill anthrax spores or for surgical sterility if the potential infection was attributable to non-resistant organisms such as the *B. typhosus* or the haemolytic streptococcus. Dr. Topping continued:

"To sum up—in the case of the common infectious diseases of respiratory origin where current disinfection has been sensibly carried out no final disinfection other than cleansing the room with soap and water and allowing free ventilation is necessary; bed-linen, blankets, etc., should be washed; mattresses stripped and exposed to fresh air. Most of us feel in our hearts that this is all that need be done and that the spread of infection, were this the recognized routine, would not be greater than it is where more elaborate methods are in force. Until we become vocal, until the powers that be come down definitely on our side of the fence, and until we get the concurrence of the general body of medical practitioners, public opinion, unaware as it is of the real modes of transmission of these diseases, will, I am afraid, resent any change."

School Children as Contacts

In Dr. Topping's opinion routine rule-of-thumb exclusion of contacts from school was as much of an anachronism as was routine closure of schools. It argued either ignorance of epidemiology or unwillingness to face up to its teaching. In epidemic periods practically every child was a contact of the disease, yet the elaborate pretence of isolation was confined only to those in contact with a known case. Exposed children were kept away from healthy, well-ventilated schools and allowed to be in close contact with the younger and more susceptible children at home and in the streets: to play, to go to cinemas, and generally to mix at will out of school hours with their fellows. This was one of the best demonstrations of the ostrich technique that even illogical public health regulations could provide. The results of observance of this fetish had never been statistically worked out. What proportion of excluded contacts actually did develop the disease?—probably not more than ½ per cent. What did exclusion cost in terms of lost education, grants, etc.?

Contacts as such, other than those who chance to be carriers—and this carrier state was largely independent of the contact for which they were excluded from school—did not convey infection. It was not until the prodromal malaise or catarrh manifested itself that the child was infectious. Where was this condition more likely to be promptly recognized, and where was transference of infection more likely to take place? In school with constant wide-awake supervision by teachers and school nurses in clean airy conditions, or in a stuffy home with a busy mother and a crowd of youngsters below school age? Exclusion of children in industrial areas was an insult to their intelligence and mumbo-jumbo of the worst type.

"The position is different if you are dealing with an isolated case of any disease and where the conditions either of the home or of the locality are such that contacts can actually be segregated from other children. But where the disease is established in an industrial area, pretended segregation of one small batch of the thousands of contacts is a waste of time and money. Variations in susceptibility are much more important than variations in the intimacy of contact, and no one, medical or otherwise, can postulate which of two children, one known to be exposed and the other only presumed to be, is likely to prove the greater danger to his fellows. I realize that any move to stop indiscriminate exclusion will be met by public outcry; exactly the same thing occurred when routine school closure was abolished and when the modified system of exclusion in measles epidemics was adopted. All are agreed that both these measures have not resulted in increased incidence but have brought cases under treatment at a much earlier stage than formerly. Surely it is time for us as a profession to give an unequivocal lead in such an important matter."

Paths of Infection

Dr. M. MITMAN said there was a paucity of evidence of a scientific kind on the value of terminal disinfection. Available statistics indicated that there was no significant difference in the occurrence of secondary cases when terminal disinfection of the old type was abolished. He believed that the vast majority of the "inhalation" diseases were contracted by the close proximity of the new host to the infected person, the transmission of droplets taking place from one nasopharynx to the other. The effective range of such droplets was relatively small (distance factor) and the life of the organism outside the body was relatively short (time factor). Droplets suspended in the air were dispersed by ventilation and the majority of the organisms in them died as the result of drying and sunlight, so that their concentration was rarely sufficient to initiate an attack except in the vicinity of an infected person. Organisms in droplets and discharges deposited on inanimate objects were in like manner destroyed by sunlight and drying. Those which remained viable formed part of the dust and might be inhaled, but the concentration was seldom sufficient to result in disease, particularly if the dust had lain for some days. The viability of the organisms deposited on inanimate objects was influenced by the organic matter—for example, mucus and grease—in which they were embedded. A detergent like ordinary soap and water was therefore a good disinfectant. The efficiency of soap and water was demonstrated in cubicle and chamber nursing. The hands of an attendant were much more likely conveyers of infection than inanimate objects and were more difficult to clean, but washing seemed to be adequate. In alimentary infections insanitary disposal of excreta and unhygienic handling of food resulting in the contamination of food and drink were the chief factors. Inanimate objects, except bed-linen, played little or no part.

If these views were correct, persons and not inanimate objects were mainly responsible for the spread of disease. Concurrent disinfection of the discharges from the upper orifices of patients with respiratory diseases, and of the excreta of patients with alimentary diseases, was therefore particularly important. Terminal disinfection need be simple only: removal of dust by a vacuum cleaner or damp sweeping; throwing open the windows to clear the air; simple laundering of bed-linen and underclothes; exposure of mattresses and top clothes to air and sunlight; disinfection of utensils by boiling, destruction of toys and books by burning; and scrubbing inanimate objects with soap and water. In special circumstances departures from these practices were necessary. The only function of disinfection was to stop the paths of infection. Terminal disinfection of inanimate objects could not do this, because such objects did not institute a common path of infection.

PLEURAL EFFUSIONS

At a meeting of the Liverpool Medical Institution on November 17, with the president, Dr. E. GILBERT BARK, in the chair, Dr. ROBERT COOPE read a paper on pleural effusions, including empyema.

Dr. Coope said that absolute dullness was the cardinal sign of effusion, but there must be enough fluid present to cause a relaxation of the lung far enough away from the chest wall to ensure that the lung vibrations did not come through; this involved the accumulation of at least some 400 c.cm. of fluid. The percussion should be quite

light, especially in marking out the upper level of the fluid; the upper limit of the dullness was highest in the axilla. In the presence of a pleural effusion there were two factors which made a sound transmitted from the larynx and large bronchi more difficult to hear or feel on the chest wall: the lung was retracted and not so elastic or stretched as normally, and the sound had, as it were, to jump the change from air to water. Other things being equal, a large number of the sound vibrations were lost and never reached the hand or ear of the observer—so far lost, indeed, that there was silence. In particular cases all might not be lost. If there was not much fluid, and if, therefore, the lung was not markedly relaxed, the sound might jump the gap between lung and fluid and be well conducted. This often occurred in children, and many an empyema in a child had been missed by letting the diagnosis wait upon absent breath sounds over an area of dullness.

The cardinal sign, he repeated, was the absolute flatness of the percussion note . . . "if this is present do not be turned aside from the likely diagnosis of underlying fluid because you may hear breath sounds, or even bronchial breathing, coming through." He thought such things as Grocco's triangle, Garland's triangle, and Traube's space unimportant and often misleading; it would be more honest now to consign them to the historical museum.

Clear Effusions

In actual practice it was not difficult to eliminate the less common causes of serous effusion; the overwhelming majority of clear effusions were tuberculous, and to accept that fact frankly was the beginning of right treatment. Even in pre-radiological days Scandinavian workers found that if these patients were treated as ordinary hospital cases of acute illness, and discharged thereafter into the rough-and-tumble of the world, 40 to 50 per cent. of them became frank cases of pulmonary tuberculosis a few years later. With the coming of radiology careful workers found the proportion to be even greater. These effusions were only symptomatic of pathological processes in the underlying lung; the fluid was essentially an incident in the wider disease. If by reason of its bulk it caused mechanical difficulties, relief must be given by drawing some of it off, but the important question was how to deal with the diseased lung.

A lung with scattered subpleural tubercles only was not one which called for an artificial pneumothorax. Apart from any question of replacing the fluid by air, was the fluid to be removed in any case? To do so might cause rapid re-expansion of the lung, a change from lymphatic stasis to a flooding of the tissues with body fluids, and a real danger of dissemination of the lesions. The fluid would usually be absorbed within four to six weeks if left alone, even though pyrexia might persist in some patients over this period. After the acute stage was over these patients ought not to go back to the stress and strain of everyday life. With adequate sanatorium treatment over 90 per cent. would return to work and remain well. This remarkable contrast with what happened if the illness was merely considered as an acute episode called for courage on the part of the doctor; it was necessary to be frank with these patients in telling them what they might expect.

Empyema

Purulent effusions were of two types—true pyothorax and abscess of the pleural cavity (large or small) shut off by adhesions. It took time for adhesions to form; in the earliest stages of either a pneumococcal or a streptococcal effusion the pus would be thin and adhesions would not yet have formed. The practical difference between pneumococcal and streptococcal empyema was that an effusion complicating a streptococcal infection of the lung formed early, and the pneumonia—usually a bronchopneumonia—did not as a rule resolve so quickly; the streptococcal effusion tended to remain thin and cloudy for much longer than did the pneumococcal. The pneumococcal empyema was not usually diagnosed until the pneumonia had resolved, the pus was thick, the empyema was walled off, and the condition was ripe for operation. "Evacuate pus straightway by free incision" was altogether too hasty counsel in the streptococcal cases. On the other hand, the over-cautious physician tended to be too dilatory in the pneumococcal ones.

It was true that pus must be removed, and the sooner it was removed the better for the patient both immediately and for the future. It was important, however, not to kill the patient in the process, and, moreover, the pus must be evacuated in such a way as to encourage the lung to expand. Some form of closed drainage was the ideal, during the acute stage of the lesion in the underlying lung and to favour proper expansion later. But if the patient came to the surgeon with large masses of fibrin and sloughs in the pleural cavity, then open operation might well be necessary, followed later by closed drainage. In purulent effusions, too, the condition in the underlying lung must be looked to for guidance in right treatment. Pus in the pleura was not only due to acute infectious processes in the underlying lung; there might be primarily a lung abscess, or a neoplasm, or phthisis, or even a subdiaphragmatic abscess.

In the discussion which followed Drs. RONALD ELLIS, G. S. ERWIN, and WALLACE JONES took part, with Mr. JOHN T. MORRISON, Mr. HUGH REID, and Mr. F. RONALD EDWARDS.

At the same meeting Dr. H. WALLACE JONES showed a cinematograph film illustrating in slow motion various abnormal gaits.

BRITISH ORTHOPAEDIC ASSOCIATION

Annual Meeting

The annual meeting of the British Orthopaedic Association was held in Birmingham under the presidency of Mr. NAUGHTON DUNN. A large number of members attended and enjoyed the scientific sessions, and also a tour, conducted by the Dean of the Medical Faculty, Dr. STANLEY BARNES, of the impressive new hospital centre and medical school. The association dinner was held at the Midland Hotel. A clinical demonstration was given in the out-patient department of the Royal Cripples' Hospital by Messrs. Naughton Dunn, Percival Mills, J. B. Leather, Wilson Stewart, F. G. Allan, A. G. Hendry, T. S. Donovan, and H. Donovan.

Coxa Plana.—Mr. H. JACKSON BURROWS (London) in this contribution epitomized the essay for which he had been awarded earlier this year the Robert Jones medal and prize of the association. He dealt chiefly with the pathology of the condition, and its relationships to similar lesions of other bones and to proven aseptic necrosis of bone. He described the essential histology of coxa plana as (1) an atypical subchondral necrosis which involved lysis of trabeculae, and (2) ingrowth of phagocytic and reparative young mesodermal tissue. The radiological criterion was destruction of trabeculae. Coxa plana could not be regarded as due to complete arterial obstruction, for in lesions resulting from such arterial obstruction—for example, aseptic necrosis of the femoral head following subcapital fractures—the normal architecture and texture of the bony trabeculae were preserved for a long time. Mr. Burrows discussed the experimental work which he had carried out in trying to determine the pathogenesis of coxa plana. Arterial obstruction alone did not produce the typical changes, and he felt, though he had been unable to prove, that venous obstruction and/or haemorrhage into the bony nucleus of the femoral head might play an important role. Infection, though unlikely, could not be ruled out entirely as a causal factor.

Bone Lengthening.—Mr. F. G. ALLAN (Birmingham) described in detail the method he employs for leg lengthening.

He discussed the indications for this procedure and the precautions which must be observed. From an analysis of the large series of patients on whom he had performed lengthening operations he concluded that two-inch lengthening could be safely and easily obtained, that tibial lengthening was more certain and easier to control than femoral lengthening, and that many of the complications experienced by other surgeons were due to extensive and unnecessary stripping of the periosteum and damage to the soft tissue.

Operation for Calcaneo-cavus.—Mr. BRYAN MCFARLAND (Liverpool) said the essential steps of the operation were the removal of a substantial wedge of bone from the posterior third of the os calcis, and its insertion into a niche on the dorsal surface of the neck of the astragalus, close to the articular surface for the tibia. If the wedge was inserted accurately it formed a block to excessive dorsiflexion. The procedure and patients before and after the operation were clearly illustrated by a cinematograph film.

Osseous Dystrophy following Icterus Gravis Neonatorum.—Dr. FRANCIS BRAID (Birmingham) gave a full account of two patients who had a disease characterized by (1) jaundice of the familial icterus gravis type at birth with acholia; (2) pathological pigmentation of the skin; and (3) a generalized cystic condition of the bones, which developed some time after birth. The bony changes might possibly have represented an accompanying developmental defect, or they might be secondary to cirrhosis of the liver (present in both patients) which could very well have disorganized the storage and utilization of vitamins.

Tuberculous Infection of Bursa over Great Trochanter.—Mr. T. S. DONOVAN (Birmingham) described five patients who had suffered from tuberculous infection of the subgluteal bursa. He made a plea for early excision; treatment by immobilization of the hip in recumbency had proved ineffective.

Snapping Jaw.—Mr. A. CAMERON ARMSTRONG (Liverpool) discussed the pathology of this condition, and an operation for the removal of the torn meniscus was described and illustrated by a cinematograph film. Through a short oblique incision in front of the ear the zygomatic arch was exposed and a half-inch of it removed (to be replaced at the end of the operation) immediately in front of the eminentia articularis. This procedure gave a clear view of the anterior and anterolateral aspects of the joint, and excision of the meniscus was easy. In the two patients on whom the operation was performed a temporary paresis of the frontalis muscle developed, but recovery was complete in a few weeks.

Radiographic Changes of Childhood as Seen in Adult Life.—Dr. J. F. BRAILSFORD (Birmingham) showed an interesting series of radiographs of various bone dystrophies in patients with whom he had been able to keep in touch from childhood to adult life. He discussed the relationship between epiphyseolysis of the upper end of the femur and renal rickets, and described in detail the radiological appearances in the "preslipping" stage. He regarded infantile coxa vara as a localized bone dystrophy. Bone changes of a similar nature were sometimes seen in cleido-cranial dysostosis and in Albers-Schönberg disease.

Non-traumatic Dislocation of Toes.—Mr. SAYLE CREER (Manchester) gave an account of thirty-six patients in whom non-traumatic dislocation of one or more toes at the metatarso-phalangeal joint had occurred, the majority in connexion with hallux valgus and metatarsal arch defects; pes cavus was present in only one patient. In three cases there were plantar sinuses leading down to the dislocated joints. Mr. Creer disagreed with Branch's theory that the dislocation was produced by interosseous muscle action, and he demonstrated very clearly in a cinematograph film that these muscles on faradic stimulation had an action quite different from that ascribed to them by Branch. It was therefore concluded that the extensor tendons were the dislocating factors, in association, of course, with deformities already present. Treatment consisted of tenotomies of the extensors in the early stages; when the dislocation was long established excision of the base of the phalanx was necessary.

Local News

ENGLAND AND WALES

London School of Medicine for Women

The annual dinner of the London (Royal Free Hospital) School of Medicine for Women was held at the Savoy Hotel on December 1, Mr. E. Ulysses Williams presiding. In proposing the toast of "The School and the Hospital," the chairman mentioned various matters of domestic interest, including the honours and appointments gained during the year by old students, for all of whom the school maintained an affectionate regard. He also congratulated Mr. L. E. C. Norbury, surgeon of the hospital, on his election as a member of the Council of the Royal College of Surgeons. One event of the year was the installation in the physiological department of a cinematograph with sound, which would be of great advantage to those working there. The toast of "The Guests" was proposed by Mr. J. D. McLaggan, and was coupled with the names of Miss Helen Simpson (Mrs. Denis Browne) and Sir Girling Ball. He appraised Miss Helen Simpson's novels, saying that she was primarily a teller of stories and not one of those modern writers who probed too deeply into the abysmal depths of the human mind. Of Sir Girling Ball he said that his most distinguishing characteristic was his enormous fund of common sense. Among other guests he mentioned Mr. Denis Browne, who had acquired a great reputation as a soldier and a surgeon, but whom he remembered also as a tennis player "up to Wimbledon standard" on the old court at the back of Great Ormond Street; their old friend Sir James Berry; Dr. Hamilton Fairley, who had come in the place of Sir Leonard Rogers; the Editors of the *British Medical Journal* and the *Lancet*; and Sir Walter Schröder, who, as the doyen among coroners, carried with him a tradition of dignity and courtesy which it would be difficult to match. Miss Helen Simpson began her reply with the remark that she was that "scourge of the profession"—a doctor's wife. Soon after entering that state she had a succession of illnesses which enabled her to look on the profession from the outside as well as from within and led her to offer a few observations as a patient on the manner in which doctors might better conduct their art or craft, or, as it used to be called in the Middle Ages, their "mystery." She thought it a mistake for doctors to take patients too much into their confidence. With scarcely an exception, what patients wanted from doctors was not reason but magic, and, indeed, the profession showed some appreciation of this when they used an astrological sign at the beginning of their prescriptions. Another consideration was that each patient believed himself to be unique, and resented being told that the doctor knew all about his particular complaint. It was a difficult task a doctor had to do—to keep patients in their place and at the same time to bolster up their conceit of themselves, to range them in classes and also to see them as individuals, and to combine the spirit of a vocation with the pursuit of a profession. It seemed odd to her that a profession embodying all these qualifications should for so long have been closed to women. She quoted from Lord Horder's inaugural address delivered at the school a few weeks previously that medicine seemed a natural profession for women to follow, and that the perfect doctor combined the woman's sensitiveness with the man's strength. It was a curious attitude, surely, to suppose that it was womanly to dress a wound but unwomanly to stitch it up, womanly to nurse but not to doctor. Women had something to give to the profession, perhaps not least because they had not quite the same herd instinct as men, nor quite the same reverence for tradition. Such challenge to tradition was not unhealthy in a scientific calling. Sir Girling Ball, who

also responded, spoke of a recent visit he had paid to the London School of Medicine for Women, and said that although the building dated back for nearly seventy years he had been struck by its modernity, especially the first-rate dissecting room. It lacked only space to expand, and he had wondered whether it would be possible to acquire a piece of land for this purpose from the Foundling Hospital. He felt that the schools in London should get much closer together, and in his capacity as Dean of the Medical Faculty of the University he intended to do his utmost to bring this about. There should not be all these separate bodies doing the same kind of work. A committee of the deans of the various medical schools was now in existence, and more and more important educational subjects came before it. After the chairman's health had been proposed by Mrs. Scott-Brown and duly honoured, the company broke up for dancing.

Scientific Treatment of Delinquency

Many influential people attended a dinner at the Savoy Hotel, London, on November 29 in aid of the Institute for the Scientific Treatment of Delinquency, under the chairmanship of Viscount Hailsham. The occasion was well timed in view of the recent publication of the Prison Commissioners' report and the introduction into Parliament of the Government's Criminal Justice Bill. The main purpose of the dinner was to raise funds to carry on and extend the work of the Institute at its clinic at 8, Portman Street, W. Some £2,000 a year is needed for maintenance and extension of the out-patient clinic to provide further staff and for research into the causes of crime. The clinic is operated by a staff of medical consultants and psychotherapists, who give their services voluntarily. The cases with which it deals are sent by magistrates, probation officers, social workers, and others; the opinions of the Institute's experts on these cases are co-ordinated by a director and a report is sent to the appropriate person, usually a magistrate. The speakers at the dinner were the Lord Chancellor (Lord Maugham), Viscount Samuel, Lord Roche, Mr. St. John Hutchinson, K.C., and Dr. Denis Carroll, a director of the clinic. The Lord Chancellor, commending the appeal, referred to the great progress made in penal reform during the present century. He said that the Prevention of Crime Act, 1908, and the Children's and Young Persons Act had effected a revolution in the law, and the new Criminal Justice Bill would bring about further important reforms. Lord Samuel said that in this Bill the Institute would have its charter. The dinner was organized by Countess De La Warr and Mrs. Harry Sacher. The appeal fund now exceeds £3,720, and more than £1,000 was collected in the room.

Lay Analysts at London Mental Hospitals

At the meeting of the London County Council on November 29 the Mental Hospitals Committee reported that it had considered a request by the director of research of the Institute of Psycho-Analysis for a small number of lay analysts in training at the institute to be allowed to be present to observe the reactions of patients when they were being examined at St. Bernard's Hospital, Southall. It was stated that the medical staff of the hospital were willing to co-operate in the arrangement, which meant the attendance at the hospital from time to time of two or three persons, not medically qualified, who were in training with a view to the practice of psycho-analysis. It was unusual for these students, in the course of their training at the institute or in their ordinary practice after training, to get experience of the major psychoses, and it had been represented that acquaintance with these would provide a useful background for other experience. The Mental Hospitals Committee had decided to grant the permission asked for, in the first instance for one year, when the arrangement would be reviewed. It was not proposed that lay analysts should be employed by or on behalf of the Council either in the mental hospital service or under any arrangements made for after-care.

The proposal met with some opposition in the Council. Mr. F. S. Henwood moved and Dame Florence Barrie Lambert seconded an amendment instructing the committee to defer the permission until the Mental Health Committee of the British Medical Association, which was understood to be investigating the question of non-medical psycho-analysts, had reported. [The Mental Health Committee was appointed by the Council of the Association to inquire into the present medical equipment and provision for dealing with mental health in this country, with particular reference to the problems of the treatment and prophylaxis of the psychoneurotic and allied disorders.] Mr. Henwood considered that the proposal to allow persons who had no medical training to be present during the examination of patients was open to question. The patients were those who had been sent to a mental hospital under magistrate's order, they were at the mercy of the Council, and the Council had special responsibilities towards them. He also suggested that the question might be referred to the Council's medical officers as a body. The proposed action was defended by Mr. J. R. Oldfield, who said that the Institute of Psycho-Analysis was a perfectly proper body in every respect. The trainees were merely to be present as observers. The people observed were so acutely deranged that they would be unconscious of the presence of the trainees. He added that the Council had the only concentration of acute cases available in London, and if its assent were not forthcoming it was as good as saying that the trainees should have no experience at all. The medical superintendent of the hospital and his staff were in favour of the new departure, and the patients would in no way be jeopardized.

The amendment was defeated, and the report sanctioning the permission for the lay analysts to be present was approved.

SCOTLAND

Hospital Co-operation

The Secretary of State for Scotland, Mr. John Colville, discussing the need for co-operation in hospital services at the recent meeting of the Victoria Infirmary, Glasgow, said the work of voluntary hospitals was a natural expression of the spirit of liberty which was dearly prized in this country. The nation showed a sure instinct in cherishing the voluntary hospitals, but it would be a bad mistake for them to hold aloof from the municipal hospitals. The voluntary hospitals had recently sent him a memorial urging the need for co-operation in Scotland, and this initiative was a tribute to the voluntary hospitals. Changing conditions in medical science and the increased scale on which hospital services had now to be conducted had created the need for co-operation in this field of public work. Diseases that had formerly crippled or led to untimely death were being attacked with patient and confident skill, and the people of Scotland were healthier than formerly, although disease still took too heavy a toll. Mr. William Gray, chairman of the hospital, announced that Viscount Weir had given £7,000 for the building of a fracture clinic as recommended by the Departmental Committee on the Rehabilitation of Persons Injured by Accidents. The Victoria Hospital in the fifty years of its life had grown from an institution of eighty-four beds to one of 555 beds, treating 11,000 in-patients and 114,000 out-patients annually. Lord Provost Dollan of Glasgow referred to the antagonism which had formerly existed between the voluntary and municipal hospitals; this, he said, no longer existed in Glasgow because of an increasing understanding that the municipal and voluntary hospitals were not competitors but were working in the same cause.

Edinburgh Hospital Problems

At the annual meeting of the League of Subscribers to the Royal Infirmary, Edinburgh, it was stated that whereas twenty years ago the ordinary expenditure for maintenance was £87,000, last year it was £186,000, and the number of patients twenty years ago was 11,181, while last year it was 21,936. The chairman of the Board announced that the new maternity hospital and nurses' home were nearly completed, and would, it was expected, be in occupation by March 1, 1939. Maintenance of the maternity block was going to add about £30,000 a year to expenses, and it would be necessary for the citizens of Edinburgh to take a greater interest in the maternity work. The managers of the Infirmary were ready to meet representatives of the local authorities to discuss matters involving the municipal hospitals and the Infirmary, and among other things a contributory scheme would require careful consideration. Mr. Andrew Eunson, honorary secretary of the League, reported that there had been a considerable increase in contributions. In 1918 they received £1,600 from employees in public works and businesses; in 1938 this had risen to £32,000. The Edinburgh municipal hospitals were not full, while the Infirmary had a waiting list of over 3,000. The solution seemed obvious—namely, to utilize the empty municipal beds for the waiting patients. It had been suggested that a contributory scheme should be started under which the treatment of members of the scheme would be paid for either in the municipal hospital or in the Infirmary. Such a scheme, however, could not be adopted for Edinburgh alone, because more than half of the patients in the Infirmary came from outside of the city. A contributory scheme must therefore apply to the whole of the south-east of Scotland, but the charter of the Infirmary did not permit the institution of a general system of payment, and the attitude to a contributory scheme of the other voluntary general hospitals in the area was not yet known.

Correspondence

Primary Abdominal Tuberculosis

SIR,—The contribution of Drs. Stefan Engel, Ruby O. Stern, and G. H. Newns on the danger of primary abdominal tuberculosis in children (November 19, p. 1038) is both timely and welcome, as it calls attention to a condition which is preventable and is a far more serious menace than commonly supposed. They have well shown how frequently a fatal termination may be anticipated in numbers of very young children. Nevertheless, I believe the infection exists in many children and may often be overcome by suitable treatment and in some cases cured naturally without its presence having been diagnosed or even suspected. It would be of value if a similar investigation to theirs were conducted in children from the age of 5 to puberty. I have been interested to observe the much higher proportion of cases of primary mesenteric tubercle admitted to this hospital in recent years. This is probably in part due to improved early diagnosis, though it must be admitted that many were only discovered at laparotomy, especially for appendicectomy.

Except in fulminating cases where meningitis supervenes, comparatively early diagnosis should not be so difficult as the authors would have us believe. Even apart from family history or conditions known as likely to produce infection the general appearance of the child, his facies, malaise, irritability, apathy, capricious appetite, occasional attacks of colicky pain relieved by warmth and pressure, sometimes diarrhoea alternating with constipation, in a few cases vomiting, should lead to a tuberculin test being applied. Stigmata of tuberculosis as described by Rivers, ichthyosis, deflected nasal septum, and even squint, though by no manner of means invariable, do sometimes occur and should put us on guard. Locally, frequent absence of abdominal reflexes and localized abdominal tenderness on deep palpation with slight muscle guarding are common, and in more advanced cases the doughy abdomen associated with matted intestines and sometimes free fluid in the flanks makes the presumption of tuberculosis very probable. In acute cases there may be tenderness in the flanks and occasionally very easily palpable enlargement of iliac and groin glands on the side affected. Pyrexia is an uncertain sign, but a moderate degree in untreated cases is common.

On the pathological side haematological examination should be undertaken, as it may afford valuable confirmation of clinical findings, and the sedimentation reaction of the blood should always be ascertained. Examination of the stools for occult blood and tubercle bacilli should invariably be made, and the by some discredited Triboulet test for intestinal ulceration or, as I would prefer to call it, intestinal permeability has, in my hands, proved valuable both as one of the many aids to diagnosis and also as a guide to the conduct of treatment. *X*-ray examination may be of little if any value at the onset, but later is often of very real help.

I cannot but believe that if investigations somewhat on these lines were undertaken in suspected or doubtful children many cases would be discovered and subsequent disability, invalidism, or even death averted. The tuberculin tests, harmless if of the Pirquet variety, may supply a useful initial hint. Failure to undertake these and perhaps other investigations may lead to dissemination and dangerous sequels. These facts are beginning to be appreciated and are already having favourable effects. They should be emphasized.—I am, etc.,

Alton, Hants, Nov. 28. HENRY GAUVAIN.

Glycosuria

SIR,—The matter of which I give details confirms what I have long suspected—namely, that diabetes is an insidious disease, often of slow progress and of long duration before its discovery, giving no distress to its victim and no means of diagnosis to the physician save by urine testing, and causing essential cell destruction. Volunteers for the auxiliary fire service of the air raid precautions scheme in the borough of Crosby had a sample of their urine tested. Of 132 men examined, eight were found to have glycosuria, their ages ranging from 26 to 40 years. The precipitation on testing was rapid and copious in all but one case. Each of the eight men said that he felt quite well and strong, and all save one followed occupations involving hard work; every objective symptom was absent except that one man stated that at times he had pains running down the limbs, which he attributed to a "little rheumatism." On physical examination the vision of each man was normal; no examination of the disk was made. Diagnosis was only possible by examination of the urine.

Each man was referred to his own doctor. One practitioner, to whom I had referred one of the men, said that in the last few weeks, on testing samples of urine, he had discovered five cases of glycosuria which, owing to the absence of subjective symptoms and physical signs,

would otherwise have been missed. He went on to state that his late professor of medicine at Edinburgh had said in his lectures that anxiety and mental stress are among the causative agents of glycosuria, and had pointed out its greater incidence among the Jewish race. This, the professor considered, was due to so many of the Jews being engaged in banking, money-lending, speculation, and keen businesses, and, in addition, to their being treated with antipathy in so many countries that mental stress and anxiety were ever present. My friend's view was that the recent cases he had encountered were due to like causes, induced by business disturbances, fear of war, and general unrest caused by the international situation. —I am, etc.,

Liverpool, Nov. 28. VINCENT J. GLOVER.

Haemorrhage following Tonsillectomy

SIR,—Mr. D. W. Ashcroft, in his article on haemorrhage following tonsillectomy, in your issue of November 26 (p. 1079), states: "According to the literature ligation of the external carotid artery is of doubtful efficacy in any type of tonsillar haemorrhage on account of the extensive anastomosis of this vessel through the circle of Willis." The external carotid artery does not enter, even indirectly, into the formation of the circle of Willis, nor do any of its branches. The major part of the blood supply of the tonsil is derived from the rami dorsales of the lingual artery, which anastomose with those of the opposite side, as also do the palatine arteries which contribute branches to the tonsil, and ligature of the external carotid may therefore be ineffective.

Mr. Ashcroft further states: ". . . it is desirable that effective measures for the control of any bleeding should be instituted before transfusion becomes necessary." I think that many surgeons will agree with the view that transfusion is of value more for its haemostatic effect than for its mere replacement of blood lost, and that it should no longer be regarded as a late resource.—I am, etc.,

London, W., Nov. 25. S. E. BIRDSALL, B.Ch., F.R.C.S.

Pituitary Extract in Third Stage of Labour

SIR,—It was interesting to read the article by Dr. G. W. Blomfield in the *Journal* of November 26 (p. 1083), on the giving of pituitary extract with a placenta still in the uterus. I have done this in cases of retained placenta on four occasions during the past six months.

The first time was for a patient who had some degree of post-partum haemorrhage and after many attempts had been made to express the placenta. When first seen she was badly collapsed, her pulse could not be felt, and she had a flabby uterus which continually relaxed and filled with blood clot, in spite of a controlling hand on the fundus. Her condition was too poor to permit of a manual removal, so 1 c.cm. of pitocin was injected intramuscularly and the blood clot gently expelled from the uterus and vagina, the abdomen and fundus being very tender. The uterus then contracted on to the placenta and the bleeding ceased. Intravenous glucose, 20 per cent., was administered. The bed was already raised at the foot; an electric blanket was put over the patient and ¼ grain morphine was given. A watch was kept on the fundus, but no excessive bleeding occurred. The patient's condition gradually improved, and fourteen hours later, after a good sleep, she was given an anaesthetic and the placenta was expressed. During the puerperium she had a raised pulse and temperature for some days, but was able to get up on the tenth day and went home normally on the fourteenth day.

The second and third cases were similar, but not so ill when first seen.

The fourth case was one which I delivered myself under light chloroform and ether anaesthesia. One and a half hours after the delivery a third attempt to express the placenta failed. This patient had had a long labour—terminated by forceps for foetal distress. Her condition was good, but she was obviously tired; there was no bleeding and the placenta seemed firmly attached to the uterus. Remembering how well the other ill patients had responded, this patient was given pitocin also and the nursing staff were asked to keep a watchful eye on her and call me if necessary. Next morning—that is, about six hours later—the placenta was easily expressed. This patient's puerperium caused no anxiety.

In my experience repeated attempts to express a placenta generally cause marked shock and collapse, while a manual removal, even at its best, is likely to cause sepsis later. It is probably unsafe to risk haemorrhage by leaving a placenta without first giving an oxytocic drug. Therefore pitocin to prevent bleeding, followed after a good rest by expression of the placenta, seems the most natural and rational treatment for this otherwise difficult condition. I consider, however, that it is essential to have a good, trustworthy nurse when leaving these patients; these four patients happened to be in hospitals or nursing homes, but I remained with the first case for some hours before I felt it would be safe to leave her.—I am, etc.,

Bristol, Nov. 30. MABEL F. POTTER.

The Occipito-posterior Case

SIR,—The second letter from Dr. David Price (*Journal*, November 5, p. 968) is indeed obscure, and does nothing to rectify the unfortunate impression caused by his first letter. He fails to explain how he finds the position of the occiput, the sutures of which are obscured by oedema, if he omits the "whole hand" examination. He speaks of the "impacted unadvancing head," below which a cervix cannot fully dilate in a reasonable time. Surely this is the picture of delay due to disproportion. Finally, he would have us believe that it is wise to deliver the child in the absence of uterine contractions through a cervix not fully dilated. Why such haste to complete the delivery? I cannot agree that Dr. Price's ideas will ever be considered good obstetric practice.—I am, etc.,

St. Michael's Hospital, Toronto, Nov. 22. B. E. MEEK.

*** This correspondence is now closed.—ED., *B.M.J.*

Aplastic Anaemia with Complete Recovery

SIR,—The case reported by Dr. T. H. Boon (*Journal*, November 19, p. 1041) prompts me to record a somewhat similar case recently under my care.

On July 6, 1938, a man aged 36 had several infected stumps of teeth extracted and bleeding was severe. He was admitted to the Royal Naval Hospital, Haslar, on July 8. He looked very ill on admission, his breath was foul, and there was continuous oozing from the infected gums. He stated that his health had been excellent; in fact, he had been playing water polo up to a couple of weeks before admission to hospital. His previous history was of interest. In 1921 he contracted syphilis, for which he had intensive arsenical treatment for two years. In 1930 he again developed a primary sore, and again had arsenic and bismuth therapy; he was considered cured in 1933. In 1937 he again developed a primary chancre, and again had courses of arsenic and bismuth, the last course having been completed in June, 1938. On admission to hospital on July 8 his blood count was: red

cells 2,250,000; haemoglobin 43 per cent.; white cells 5,200 (polymorphs 35.5 per cent.; lymphocytes 58 per cent.; monocytes 6.5 per cent.); reticulocytes 1.6 per cent.; coagulation time 3½ minutes; bleeding time 3 minutes. The spleen and liver were not enlarged, and his blood pressure was 110/50 mm. Hg. On July 12 the blood picture had become worse: red cells 1,500,000; haemoglobin 30 per cent.; white cells 1,800 (no immature cells seen). There were retinal haemorrhages in both eyes; his temperature was swinging between 100° and 103° F.; his mouth was grossly septic and bleeding was continuing from the gums; his nose was bleeding. On July 20 a purpuric rash was present on the trunk. On July 22 the blood picture was: red cells 2,250,000; haemoglobin 45 per cent.; white cells 2,000 (polymorphs 26 per cent.; lymphocytes 65 per cent.; monocytes 4 per cent.; myelocytes 5 per cent.). During the fortnight since admission treatment had consisted of three transfusions—each of 500 c.cm. of blood with citrate solution—and injections of liver, pentide, and soluseptasine, with iron and marmite by mouth. Though the blood picture had shown only a slight improvement his general condition was markedly improved. The oozing from the gums ceased, the mouth was cleaner, and he was taking nourishment well.

On August 12 his blood picture was: red cells 2,250,000; haemoglobin 43 per cent.; white cells 1,600. Another transfusion of 300 c.cm. of blood with citrate solution was given. The administration of pentide and soluseptasine had been stopped, but iron, liver, and marmite were being given. On August 26 there was a setback in the blood count: red cells 1,750,000; haemoglobin 41 per cent.; white cells, 1,800. The diagnosis was aplastic anaemia.

On September 12 a sternal puncture was done and the bone marrow obtained was examined and found to be normal. This caused the diagnosis to be changed to that of achrestic anaemia, and it made the prognosis more hopeful. This optimism was justified, because from then onwards the blood picture steadily improved without any remission. On October 8 the blood count was: red cells 3,500,000; haemoglobin 79 per cent.; white cells 4,400. On November 4 the blood count was: red cells 4,250,000; haemoglobin 91 per cent.; white cells 6,200. It may be mentioned that a fractional test meal showed the presence of free hydrochloric acid, and that the blood Wassermann and Kahn tests were negative.—I am, etc.,

J. G. HOLMES,
Surgeon Commander, R.N.

Haslar, Nov. 21.

Grenz-ray Therapy

SIR,—The annotation in your issue of November 26 (p. 1093) on the subject of Grenz-ray therapy is interesting and stimulating.

It is now two years since I invited Dr. Z. A. Leitner to work in my physiotherapeutic department at St. Mary's Hospital in order to introduce this much-neglected branch of physiotherapy. Results have been extremely good in the local treatment of lupus and other forms of tuberculous skin disease, and in obstinate and chronic cases of poikilodermia vascularis and other rarer and more difficult skin cases where many forms of treatment had been tried in vain. Grenz rays have also shown their great value in the general treatment of certain constitutional diseases. Cases of total alopecia come under this heading, as do certain types of allergic diseases, such as bronchial asthma, migraine, etc. All these cases need great experience and judgment, and scrupulous care regarding dosage. In these we have seen surprising and even dramatic results.

Unfortunately the possibilities of such modern methods as Grenz rays are as yet little understood in general hospitals to-day. What is needed in all our physiotherapeutic departments is a much larger number of cases that have not yet arrived at the chronically hopeless stage. Only then can adequate research be done and controlled investigations that are urgently needed carried out.—I am, etc.,

JUSTINA WILSON,
F.R.C.P.Ed., D.M.R.E.Camb.

London, W.1, Nov. 29.

Perforated Gastric Ulcer

SIR,—The article by Mr. Alan H. Hunt and Dr. Eric C. O. Jewesbury on perforated peptic ulcer in organic nervous disease (November 26, p. 1082) brought to my mind a recent remark of a surgical colleague that "the worst place to perforate is in hospital, for the houseman so seldom thinks of perforation in a patient already in one of his beds." To the first part of his sentence, and for the same reason, I would add "or just before admission to a medical ward."

On three occasions I have discovered a patient with a perforated gastric ulcer in one of my medical beds; each time the diagnosis was clinched in my mind by the finding of absent liver dullness, and each time I have been told in rebuttal that there was pneumonia at the base of the right lung—a correct finding so far as it went, for the lesion there was secondary to a collection of purulent fluid under the diaphragm. It is true that none of them presented the so-called typical board-like rigidity of the abdomen; but the absence of liver dullness is a sign surely almost, if not quite, pathognomonic, sometimes occurring reasonably early, sometimes late.

Many good-sized ulcers of the lesser curve are curiously painless in certain phases, and the physician may sometimes be surprised at not being able to elicit a typical ulcer history from the patient. Moreover, an appreciable number of perforations do not necessarily give a "typical" picture, even in the absence of organic disease of the nervous system. There seems to be no need, therefore, to bring in the presumption of a special interference with the normal pathway of pain impulses just because these patients happened to be suffering from organic disease of the nervous system.—I am, etc.,

ROBERT COOPE.

Liverpool, Nov. 28.

Anti-pernicious Anaemia Principle in Urine

SIR,—The presence of the anti-pernicious anaemia principle in urine has been investigated by several groups of workers without conclusive results having been obtained. This may be due partly to the difficulty of separating without loss of potency the small quantities of the anti-anaemia principle that may be present in a state suitable for parenteral injection (and free from toxic substances), and partly to the fact that many of the examinations for anti-anaemia potency have been done with the rat or guinea-pig tests, which, while often used by Continental workers, have now been rejected as unreliable by most others.

In their paper Dr. Edouard Jéquier and Major G. R. M. Apsey (*Journal*, November 5, p. 934) obtained positive reticulocyte-provoking responses with urine (as judged by an increase in reticulocytes from 0.5 to 2.3 per cent. initially to maxima of 3.1 to 4.5 per cent. after injection into rats), while Mr. B. D. Thornley (November 26, p. 1113) did not get any response when his extract of normal urine was tested clinically in one case.

During the last six years my chemical collaborators in this department have prepared in various ways extracts of urines for examination for the presence of the anti-

anaemia principle. In this manner we have made and examined six series of urinary extracts which have been tested for anti-pernicious-anaemia potency in the usual manner in controlled cases of pernicious anaemia. Our results have been as follows:

Series 1 and 2 were prepared from the urines of patients with subacute combined degeneration of the spinal cord, treated with daily parenteral liver preparations. Each patient supplied about 20 to 25 litres of urine, and the extracts when given to untreated cases of pernicious anaemia produced no remissions in Series 1, but normal remissions in Series 2. The two series were prepared differently.

Series 3 and 4 were obtained from normal urines—40 litres of urine from each normal individual being used. The extracts in Series 4 gave normal remissions in test patients, but those in Series 3 gave painful reactions and were discontinued.

Series 5 was prepared from urines from untreated patients with pernicious anaemia—35 to 40 litres of urine being collected from each. These extracts were inactive when tested clinically.

Series 6 was made from 23 litres of urine from one treated patient with pernicious anaemia in remission. This has only been given so far to one test case with a doubtful response.

Our impressions are that whatever amount of anti-anaemia principle may be excreted in the urine it is not present in very large quantity.—I am, etc.,

Manchester, Dec. 1. JOHN F. WILKINSON.

Vitamin B_1 and Insulin

SIR,—We have read with interest Dr. A. Gordon Watson's description of a diabetic case treated with vitamin B_1 (*Journal*, November 26, p. 1111), which suggests that the vitamin had a beneficial effect on the diabetes and reduced the insulin requirements. Our experience is not so fortunate. We have treated a fairly large series—well over a hundred—of insulin cases with big doses of vitamin B_1, a few by injections, most orally. While the neuritis has often been benefited, we have never observed any effect for better or for worse on the carbohydrate tolerance or insulin requirements. Many of our cases have been under close observation, and we certainly should have noticed any improvement in them.—We are, etc.,

R. D. LAWRENCE.
W. G. OAKLEY.

Diabetic Department,
King's College Hospital, S.E.5,
Dec. 2.

M & B 693 in Gonorrhoea

SIR,—I have read with much interest and profit the preliminary report by Dr. R. C. L. Batchelor and his colleagues published in the *Journal* of December 3 (p. 1142), and agree with their conclusion that M & B 693 is the most potent anti-gonorrhoeal agent at present. These authors investigated 102 cases in both sexes and achieved 91 per cent. of *apparent* cures. The standard of cure aimed at by the authors was not achieved in all 102 cases. Had this standard been achieved it is reasonable to expect that their rate of apparent cure would have been lower. From the scientific point of view one is more interested in the permanent rate of cure, however large or small the number of cases; of course the greater the number the better. There is almost a specific drug for the early infections of syphilis in the form of arsenobenzol or bismuth preparations. The standard period of observation is a minimum of two years. In view of this I suggest that the minimum period of observation after treatment of gonorrhoea with chemotherapy should be two months in male cases and six months in female cases—if we are to find out the permanent rate of cure in gonorrhoea by chemotherapy. It is interesting also to point out that Dr. Batchelor has not used vaccines in his valuable investigations, and does not advocate delayed chemotherapy.—I am, etc.,

R. MARINKOVITCH,
Salford, Dec. 3. Venereal Diseases Officer, City of Salford.

Air Raid Precautions

SIR,—Most people will agree with Dr. F. G. Chandler's criticisms of the hospital organization during the September crisis. I think, however, that it is fair, and I believe correct, to remind Dr. Chandler that the Ministry of Health had the "baby" of responsibility handed to it less than three months before the actual crisis, and, further, that the individual hospitals were only informed in detail what was expected of them within two weeks of the crisis.

I am not in a position to say what individual or Government Department was responsible for this amazing want of foresight, nor does that matter at the present time, as I hope, and feel convinced, that the organization that is now being got out by the Ministry of Health will be very different from the hasty organization in September last.

I know nothing about the future organization, but it seems to me that the most important step is the provision of potential base hospitals round the large cities, with advanced base hospitals rather closer for those abdominal and head wounds which can without much risk be moved out of the danger area. I agree with Dr. Chandler that the work of the casualty clearing stations in the next war will be much more in the nature of first-aid-post work than was the case in the last war. It seems fairly certain, also, that a great number of young men will have to deal with this type of work while the senior surgeons and physicians are in the base hospitals, where teaching will have to be carried out when hostilities allow of it. Whether the casualty clearing stations will have to be so numerous as to require other buildings than the existing hospitals of the cities seems to be doubtful, but that portions of the hospitals should have special protection in order to deal with those cases that cannot be transported out of the danger zone would seem to me to be essential. Had the war started in September I am convinced that within a few weeks the hospitals in the centre of London would have been closed down until such protection could be given to make them into first-aid posts.—I am, etc.,

London, W.1, Dec. 2. MALCOLM DONALDSON.

SIR,—Recent letters in your columns, statements in Parliament and elsewhere, and admissions by responsible spokesmen of the department mainly concerned have all emphasized the inefficiency of what has been attempted in the way of air raid precautions. But the authorities whose labours over some years have accomplished so little are still in charge, and signs of any radical improvement are not evident. Major W. V. Fawkner-Corbett, in the *Journal* of November 26 (p. 1114), puts the case for an organization on lines copied from the Army. As an official who has had to do with local attempts to work the A.R.P. scheme I should like to support that. In my opinion the endeavour to organize efficient A.R.P. with unpaid volunteers is illogical and doomed to failure. Apart from the folly of concentration on obtaining volunteers before schemes were prepared or arrangements in hand for training (in my districts equipment for instruction is not yet to hand), how can the allegiance of such unconsidered volunteers be kept in face of the counter-attractions of the Women's Auxiliary Territorial Service, or the anti-aircraft

batteries which I understand works and factories are to organize from their hands? I would suggest that the protection of the civil population from air raids is a military responsibility, the neglect of which may lose a war, and that a force for this purpose should be organized on the lines of the Territorial Army. One must realize that it is not a question of temporary arrangements for protection in a situation which is not going to recur, but that from now on it is a permanent national need.—I am, etc.,

Guisborough, Yorks, Nov. 29. C. R. GIBSON.

SIR,—May I support the point brought forward by Dr. F. G. Chandler in the *Journal* of December 3 (p. 1175). During the crisis emergency schemes were organized in the central hospitals which, as examples of rapid improvisation and within the limits imposed by the controlling authorities, were excellent. The essence of the schemes was that medical and nursing personnel should be concentrated in the available hospitals in the areas in which most casualties were likely to occur. The urgency of the situation probably made these limits necessary then, but, like Dr. Chandler and many others, I am very disquieted at the possibility of their still applying in a more carefully worked out scheme. The amount of destruction of medical and nursing personnel which would occur from the continued chance bombing of such strongly concentrated collections would in no long time raise replacement problems of national, and possibly international, importance. But already one hears suggestions that the more permanent schemes may be on similar lines, and there is talk of adding to the medical and nursing concentration at the central hospitals a further concentration of voluntary workers for bandaging, canteen work, and other such auxiliary services, the atmosphere being more suggestive of the Boer War base hospitals than modern front-line institutions. Study of the methods of modern warfare, which is to-day being forced on even the inexpert, points to two principles to which all medical emergency schemes should, in my opinion, conform:

1. The principle of holding the front line by a minimum of screen troops. Applied to the medical services this means that the central hospitals in emergency should be staffed by the minimum number of medical men and auxiliaries, with facilities for reinforcements if required. The great bulk of the medical and nursing personnel should be carefully conserved.

2. The principle of dispersal. This means that such medical services as have to be retained in the central area should be scattered in multiple small units rather than concentrated in large institutions. In this connexion the use of suitable accommodation in large commercial houses is at once obvious, the units being based for purposes of personnel and supply on the corresponding hospital of the district.

—I am, etc.,

London, W.1, Dec. 5. DAVID H. PATEY.

Control of Small-pox in India

SIR,—I think that Dr. C. Killick Millard's critics (*Journal*, December 3, p. 1180) have missed the point. It is plain from his letter (November 19, p. 1061) that Dr. Millard is not in any doubt concerning the infectivity of variola minor, while on a number of occasions he has placed on record his appreciation of the fact that recent successful vaccination protects *the individual*. What he does affirm now (if I read him aright) is that vaccination as carried out in India to-day has lamentably failed to control small-pox among the native *community*; and the remedy which he suggests as being apparently in his own view more practicable than measures aiming at more and better vaccination is the deliberate introduction of variola minor as a prophylactic measure against variola major.

For myself, I have grave doubts, for technical and moral reasons, regarding the practicability of his suggestion; but I would base my main criticism on the grounds that the whole rationale of Dr. Millard's suggested procedure arises from the false premise that variola major and variola minor cannot coexist in a community.—I am, etc.,

Dartford, Dec. 4. J. PICKFORD MARSDEN.

SIR,—Dr. J. D. Rolleston (December 3, p. 1180) has unfortunately misread my letter (November 19, p. 1061). So far from stating that variola minor was not infectious, I used the fact that it was infectious as being a great advantage in a country like India, as compared with vaccination. It is, of course, true, as Dr. Rolleston points out, that variola minor is not entirely free from risk; but compared with variola major it is certainly a trivial disease. And, after all, vaccination itself is by no means entirely free from risk.

As regards Dr. A. G. Newell's letter (December 3, p. 1180), although he opposes my suggestion that inoculation with variola minor might with advantage be substituted for vaccination, his arguments seem to me strongly to support it. He agrees that the mortality from small-pox in India is appalling, and he stresses the enormous difficulty of controlling the disease by vaccination, owing to the social habits, the superstitions, and the prejudices of the people. But when he says that there is no evidence that vaccination has lamentably failed in India I would reply that that all depends upon how you look at it. By his own showing the methods hitherto attempted for the control of small-pox in India, the chief of which is vaccination, have lamentably failed, and in any case the mortality figures for small-pox are proof of this. It is not a case of blaming either officials or vaccination; but we have got to face the facts. Dr. Newell's remedy is education of the people as to the value of vaccination. But surely the medical authorities in India have been striving to do this for years; and even in our own country, with all our educational and other advantages, similar attempts have not been too successful. Finally, he objects to my suggestion because it might undermine faith in vaccination so far as this has already been established. I do not think that this would necessarily be the case at all, but admitting for the sake of argument that it might have such an effect, is this a sufficient reason for refusing to try a fresh method if it offers a reasonable prospect of success, seeing that the existing method has so greatly failed?

Lieutenant-Colonel H. C. Keates (December 3, p. 1180) fails to appreciate the fundamental difference between the effect of vaccination in protecting the individual and its effect in protecting the community. It is only as regards the latter that I accuse vaccination of having been a lamentable failure, and I repeat that the appalling mortality from small-pox in India, after vaccination has been "pushed" as far as ever was practicable under the existing conditions, is sufficient evidence of this. As to the effect of vaccination in protecting the individual, I am probably just as orthodox as Lieutenant-Colonel Keates himself.

In conclusion, may I point out that India and the Far East was the "home" of small-pox inoculation long before the discovery of vaccination. The idea of inoculation, therefore, would not be alien to the philosophy of the people of India. It is possible that they might accept it quite as readily as vaccination. But in the old days of

inoculation the distinction between variola major and minor was not known. It was variola major which was inoculated, and it is not surprising that the results were often disastrous. To-day the greatest care would be taken only to inoculate with the virus of variola minor, so that the results should be infinitely better. I submit, in all seriousness, that the suggestion to substitute inoculation with the virus of variola minor in place of vaccinating with calf lymph is worth consideration by the medical authorities in India. Saturate the population with variola minor and substitute a trivial disease for one which, in spite of the efforts hitherto made, is still a veritable scourge. There would still, of course, be a field for vaccination for the white population, for small-pox hospital staffs, for officials, or for any others who appreciated that the protection conferred by vaccination, although complete for a time, is not permanent, and therefore the vaccination requires to be repeated.—I am, etc.,

Leicester, Dec. 4. C. KILLICK MILLARD.

Decline of Breast-feeding

SIR,—In all the correspondence on this subject there has been no convincing evidence that food supply *per se* plays an important part in enabling a mother to supply breast milk to her infant. In the discussion that took place on the modern decline of breast-feeding at the first session of the Section of Diseases of Children at the Annual Meeting of the British Medical Association, Dr. Alan Moncrieff said that "he thought there was a danger of making too much fuss about nutrition. A poor diet during lactation might cause anaemia, but the milk did not fail in quantity until the woman was about to drop; and even then the quality remained." Dr. Ruth Young also gave her experience in India, where the Hindus were forbidden to eat meat, fish, or eggs; they were too poor to buy milk and had little fruit, yet "the infants usually gained steadily on the breast for the first seven or eight months."

In this country public health authorities can in necessitous cases supply free milk and free dinners to nursing mothers, and the amount of help given in this way is increasing every year, so that it is difficult to agree with those who stress the importance of diet, vitamins, and general nutrition in maintaining a supply of breast milk. After all, the breast is not a filter for food but a gland requiring stimulation to carry out its function. We all know that the colostrum period, especially in primiparae, is often prolonged to seven or even ten days, so that a little extra nourishment is required until full lactation is established, but when this has been accomplished the extra food can be discontinued. I feel certain that more attention to the technique of breast-feeding by the general practitioners and nurses who attend to these cases is urgently required.—I am, etc.,

London, W.8, Nov. 29. RONALD CARTER.

New Menstruation Toilet

SIR,—We ought to be grateful to Dr. E. Lawton Moss (November 26, p. 1113) for his timely warning against the use of vaginal tampons, and especially for mentioning the danger of consequent sterility. A recent experience illustrates this point, and although a single case proves nothing it may serve to make one think.

A healthy young woman came to me last June with a profuse leucorrhoea due to a cervical erosion. She had been married for ten years and was childless; she has used tampons intermittently since girlhood and regularly for the last two years. The erosion disappeared entirely after four weekly swabbings with picric acid in spirit; within three months, however, the discharge had returned, and again there was a large erosion. This unusually rapid recurrence made me question her more closely, and, with a somewhat defiant air, she told me the tampon story. She was with difficulty persuaded to stop using them—and she is now enjoying a normal pregnancy.

This case must be typical of many, where endocervicitis is an unsuspected cause of temporary sterility, and where the original suggestion of using these plugs has come, as in this case, from a doctor.—I am, etc.,

Guildford, Nov. 29. C. R. MCLAUGHLIN, F.R.C.S.Ed.

SIR,—Dr. E. Lawton Moss's letter in your columns on the use of absorbent vaginal plugs as protectives at the menstrual period prompts me to relate an experience I have had of this method of personal hygiene.

Some months ago I was consulted by an intelligent and responsible young lady about a vaginal discharge which had appeared four days previously, on the cessation of her period. She stated that menstruation had always been regular and normal, and she had never before suffered from intermenstrual discharge. On inspection I found a thin, blackish-brown, offensive discharge escaping from the vagina, and digital examination revealed a soft mass tightly packed high up in the vagina. This proved to be one of the tampons now on sale for the menstrual toilet. On its removal a rush of foul discharge escaped, and the odour from the saturated plug was exceedingly offensive. The cervix showed patches of hyperaemia where the dressing had been in contact. The patient had used this form of protective for the first time during the last period. She was astonished to find she had left a plug *in situ*.

The case emphasizes, I think, Dr. Moss's contention that such dressings are liable to become infected. It also shows that a real danger exists of one being left behind until it becomes an offence and a danger to health.—I am, etc.,

Leamington Spa, Dec. 1. DOROTHEA M. TUDOR.

SIR,—The "new" menstruation toilet is not so new. Apart from the fact that ballet dancers have used cotton-wool plugs at all times, I can vouch for the bacteriological integrity of more than one of my patients who has used some or other of the incriminated methods for over four years. A novice in this field, after reading Dr. Moss's letter, might conclude that women are in the habit of plugging the vagina when the necessity arises, and of leaving these plugs *in situ* until they become "offensive and infected," while at the same time deadly bacteria are given a chance to breed in the "dammed-up blood" above the plug. In fact nothing of the kind ever takes place, nor does it seem that even Dr. Moss has ever seen a case of "vaginitis, cervicitis, *B. coli* infection . . . or sterility" caused by this method. He only asserts that these conditions are "likely to result" from the new menstruation toilet.

On the contrary, they are not at all likely to occur, because all women who use any of these methods know that they must change their sponges or cotton-wool plugs every three hours, or before the full capacity of their soaking power is reached. They know that they must change them in time because menstrual blood does not, as a rule, coagulate, and will therefore not be "dammed up" above the plug. The incubator situation Dr. Moss describes in such gloomy terms in fact does not arise, and while I have seen some of my patients discontinue the use of this method because they disliked the presence of a foreign body in the vagina, I have never seen a case, nor heard

of one, in which this method has been the cause of any inflammatory or bacteriological trouble. And if any further proof of the harmlessness of this method be needed it might be found in the fact that it is recommended particularly by women doctors who have found it beneficial and harmless in their own experience.—I am, etc.,

London, W.1, Dec. 1. EDWARD ELKAN.

SIR,—Mr. E. Lawton Moss (*Journal*, November 26, p. 1113) designates the insertion of tampons by the woman during the catamenia as a "new menstrual toilet." Actually it has been in use in America for the past few years (see *J. Amer. med. Ass.*, March 12, 1938).

Apart from the bacteriological considerations mentioned by Mr. Lawton Moss, with the possible resultant ascending sepsis, sterility, etc., these tampons act as a mechanical foreign body in the vagina. To insert into the vagina during periods of recurrent increased epithelial proliferation a pack composed of cotton, wadding, or gauze, which swells up and loses its pristine smoothness, is to increase the susceptibility of the vaginal mucosa to the results of mechanical irritation.

I have found in the few cases I have advised that in the majority of the women some blood escapes past the tampon, requiring the added protection of a small vulvar pad within the labia. There are also obvious difficulties in connexion with various classes and types—for example, virgins, multiparae with some degree of prolapse and/or gaping vulva, etc. The method, in its present form, cannot be advocated as a routine.—I am, etc.,

London, S.W.1, Dec. 4. MICHAEL COHEN.

Social Pathology

SIR,—I thank Dr. Hilda Weber (November 26, p. 1115) for that word! . . . "The absence of action against environmental factors which frustrate the basic needs of a community will lead to the decline of individual and therefore of national health" admirably expresses a fundamental truth. It is far-reaching in its meaning. Her palliative for London, though helpful, might be disappointing because it does not go very deep. People who are herded into masses shrink into themselves in self-defence and need altogether more space for leading their own lives. Repression ultimately leads to explosion, while real life remains. I am only writing this, however, to ask that this correspondence should be continued. We are all afraid of these subjects because they easily encroach on politics, but a detached medical or scientific outlook is badly wanted.—I am, etc.,

Letchworth, Nov. 26. NORMAN MACFADYEN.

The Services

Surgeon Commander R. C. May, M.C., has been appointed Assistant to the Medical Director-General of the Royal Navy at the Admiralty.

DEATHS IN THE SERVICES

Lieutenant-Colonel STANLEY EVERARD LEWIS, R.A.M.C. (ret.), died at Shears Green, Gravesend, on November 23, aged 61. He was born on October 8, 1877, and was educated at Glasgow University, where he graduated B.M., Ch.B. in 1902. He entered the R.A.M.C. as lieutenant on August 31, 1903, became lieutenant-colonel on June 1, 1926, and retired on August 31, 1932. After retirement he was employed at Gravesend. He served through the war of 1914–18, and was mentioned in dispatches in the *London Gazette* of October 19, 1914, and January 1, 1916. He was awarded the Legion of Honour (fifth class).

Medico-Legal

A CONFLICT OF DUTIES

CRIMINAL ABORTION AND MEDICAL SECRECY

The question whether a doctor who learns in the course of a professional relationship that a crime has been committed should inform the authorities in breach of his obligation of secrecy is no new one. It arises most often in the case where a woman, dying of septicaemia as the result of a criminal abortion, tells the doctor the name of the abortionist. Most medical men are familiar by now with the classical dictum of Mr. Justice Avory in 1914. Charging the grand jury on a bill against an abortionist, he said:

"I cannot doubt that it is the duty of the medical man to communicate with the police, or with the authorities, in order that steps may be taken for the purpose of assisting in the administration of justice. No one would wish to see disturbed the confidential relation which exists, and which must exist, between the medical man and his patient in order that the medical man may properly discharge his duty towards his patient; but there are cases, of which it appears to me that this was one, where the desire to preserve that confidence must be subordinated to the duty which is cast upon every good citizen to assist in the investigation of a serious crime. . . . It may be the moral duty of the medical man, even in cases where the patient is not dying, or not unlikely to recover, to communicate with the authorities when he sees good reason to believe that a criminal offence has been committed."

In reply to this opinion the Royal College of Physicians of London passed a series of resolutions laying down that a medical practitioner is not justified in disclosing confidential information without the patient's consent; that if he is convinced that a criminal abortion has been practised he should urge the patient to make a statement if to do so would not prejudice her recovery; that if she refuses he is not legally obliged to take any further action; and that if she should die he should refuse to give a certificate and should communicate with the police.

If a patient with religious belief is sincerely convinced that she is about to die, and makes in that belief a statement to any person, that statement may be received in evidence at a trial for her homicide. It need not even be reduced into writing at the time. Needless to say, a practitioner who hears a dying declaration ought to take it down in writing, and if possible have the patient sign it or make her mark. It should if possible be in her actual words, and if questions are put, the questions and answers should both be given. If there is time, the doctor should summon a magistrate, who can take her evidence on oath. If reasonable notice can be given to the accused person to enable him or his legal adviser to be present and cross-examine, her deposition will be admissible if she dies, even though the rules covering the admissibility of a dying declaration have not been satisfied.

A Recent Case

This controversy was revived recently in the Paddington coroner's court.[1] Mr. Ingleby Oddie was inquiring into the death of an unmarried woman who had died of septicaemia after an operation. Dr. Arnold Harbour, who is a divisional police surgeon but was attending the woman privately, said she told him that she had had an illegal operation, and he sent her to hospital. She was dangerously ill and was probably going to die, though an operation might have saved her life. He consulted his solicitors and his defence society on whether he should report to the police what she had said, and his solicitors and the society advised him that it was not his duty to do so. The coroner said that he did not blame Dr. Harbour for his action. He pointed out, however, that if the doctor had taken steps to warn the authorities that the

[1] *Times*, November 8, 1938.

woman had had a felony committed on her and was dangerously ill, a dying statement might have been taken from her in the presence of a magistrate. He recalled Mr. Justice Avory's charge to the grand jury and added that, although the doctor had a moral obligation to preserve the confidence of his patient, in certain circumstances that confidence should be overridden. The position, he said, was by no means satisfactory and ought to be considered by the authorities. He feared that, until something was done, the secrecy which always surrounded these cases would be maintained and many criminal abortionists would go scot-free, as he had no doubt they often did now.

The Doctor's Duty

The views of the British Medical Association have often been expressed, and are quite clearly stated in the *Medical Practitioner's Handbook* (p. 110). They are that the suggestion that a doctor should volunteer information in such circumstances should be strenuously resisted, in the belief that nothing should be done to prevent anyone who is ill from consulting a doctor in the fullest confidence that his secret, even if it be that he has been concerned in the commission of a crime, will not be reported to the authorities.

The question was discussed by the Medico-Legal Society in June, 1927.[2] There Lord Riddell stated that the views of the British Medical Association and the Royal College of Physicians did not meet with universal medical approval, and expressed the opinion that, considering the prevalence of abortion, the leaders of the profession were undertaking a serious responsibility in advising practitioners in such emphatic terms to disregard illegal acts of a most pernicious character. While everyone recognized the necessity and importance of respect for medical confidences, doctors must also recognize that the rules regarding these existed for the welfare of the community and "not for the aggrandisement or convenience of a particular class." These words probably represent a fairly large body of legal opinion. Sir William Willcox considered that if the doctor fails to persuade the patient to make a clean breast of what has happened, then perhaps it is his duty to inform the authorities after taking legal advice.

There is no prospect of any solution to the dispute, and it is hardly to be imagined that an *ad hoc* Bill will be introduced into Parliament.

A STRANGE CAUSE OF DEATH

A householder and his wife were much annoyed by her brother, a youth of 21, who persisted in coming to the house and causing trouble, in spite of warnings. On one occasion the husband fetched a rook rifle and prodded the youth with it to frighten him. The youth tripped over a flower-border and fell against the man. The rifle went off and the bullet lodged in his neck. He was taken to hospital and put on the operating table. The surgeon had located the bullet and was about to remove it when his revolving stool slipped and he fell on the floor. He changed his gown and gloves and returned after about six minutes. The bullet had now altered its position, and he was trying to find it again when the patient's breathing suddenly became shallow and stopped. At the trial of the husband at Denbigh Assizes last month[3] the surgeon said he would not care to express an opinion on the cause of death. Dr. G. Roche Lynch said that if the surgeon had not fallen the bullet would have been taken out much earlier and the patient would have been on the way to recovery; in his opinion the death was due to chloroform poisoning.

Mr. Justice Hilbery, in addressing the jury, said that no degree of provocation excused the killing of a man. A person could use such force as was necessary to bring about ejection and no more, but a lethal weapon was an excessive thing to employ against an unarmed man. Death by chloroform poisoning was a risk attendant upon any operation. The jury would have to ask themselves whether death ensued through an operation advised by medical men, and if their answer was in the affirmative they could not convict of manslaughter. In order to convict of unlawful wounding they must be completely satisfied that the injury had been done unlawfully. They acquitted the accused on both charges.

[2] *British Medical Journal*, 1927, **2**, 17.
[3] *Daily Telegraph*, November 2, 1938.

A DEATH FROM PENTOTHAL

At a recent inquest held by Mr. A. D. Cowburn, the Camberwell coroner,[1] an anaesthetist gave evidence that he had administered pentothal intravenously to the deceased woman at a second operation undertaken a week after labour. It was very quick-acting and gave the minimum amount of shock. A pathologist said that he had found nothing wrong with the operation, and that a proper dosage of the drug had been given. In his opinion death had been caused by the effects of the drug, toxaemia, and the effects of the operation. The coroner, recording a verdict of death by misadventure, said that there had been no neglect, no mishap, and no accident. He did not altogether approve of the drug, but that was a matter for discussion, and for weighing all its advantages and disadvantages.

[1] *Daily Telegraph*, November 12, 1938.

Universities and Colleges

UNIVERSITY OF OXFORD

At a Congregation held on November 29 a gift of £200 a year for two years from Mrs. Hugh Watts in augmentation of the stipend of the assistant director of the Institute of Experimental Psychology was accepted.

UNIVERSITY OF CAMBRIDGE

The Vice-Chancellor has appointed Sir Edward Mellanby, K.C.B., F.R.S., M.D., of Emmanuel College, Secretary of the Medical Research Council, to be Rede Lecturer for the year 1939. The place and subject of the lecture will be announced later.

UNIVERSITY OF LONDON

Dr. H. Letheby Tidy has been elected Dean of St. Thomas's Hospital Medical School in place of the late Professor Leonard S. Dudgeon.

UNIVERSITY OF WALES

WELSH NATIONAL SCHOOL OF MEDICINE

The following candidates for the degrees of M.B., B.Ch. have satisfied the examiners in the examination indicated:

PATHOLOGY AND BACTERIOLOGY.—Mary E. Budding, T. C. H. Davies, T. Griffiths, D. I. Harries, A. B. J. Hill, O. Howell, R. T. Jenkins, G. A. Jones, J. E. Lloyd, Mary E. Lloyd, S. Love, T. Walker.

OBSTETRICS AND GYNAECOLOGY.—C. Davies, W. H. Harris, J. C. Herapath, H. R. Hudd, Margaret Morgan, C. Thomas, W. Williams.

The following candidates have satisfied the examiners:

PHARMACOLOGY.—Doreen M. E. Cranch, Enid Curran, Joan B. Davies, D. F. V. Johnston, Gwenllian M. Lewis, *W. C. D. Lovett, I. Mazin, J. B. Randell, Nest G. Richards, J. H. Stranger, E. R. Treasure, *Glenys J. Wade, G. A. Wright.

* With distinction.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At the annual meeting of the College, held on December 1, Dr. Alexander Goodall was re-elected President, and the following were elected to form the Council for the ensuing year: Dr. Edwin Bramwell, Dr. John D. Comrie, Dr. Charles McNeil, Dr. A. Fergus Hewat, Dr. D. M. Lyon, and Dr. A. Graham Ritchie. Dr. Comrie was nominated Vice-President.

At an extraordinary meeting held immediately afterwards the honorary fellowship of the College was conferred on Sir Charles Bickerton Blackburn, O.B.E., M.D., Sydney, first President of the Royal Australasian College of Physicians.

Obituary

WILLIAM McDOUGALL, M.B., F.R.S.

Professor of Psychology, Duke University, North Carolina

In the death of William McDougall there passes from our sight a very notable—in some ways a unique—figure.

He was born in 1871, and after studying at Owens College, Manchester, proceeded to St. John's College, Cambridge, where he graduated in medicine. He studied also at St. Thomas's Hospital and Göttingen University. As a young graduate he took part in the anthropological expedition to New Guinea and Borneo in company with Rivers and Myers. In 1902 he was appointed Reader in Psychology at University College, London, and from there he proceeded to Oxford as Wilde Reader in Mental Philosophy. During the war he served in the R.A.M.C., and when Littlemore was opened as a hospital for functional cases he became senior clinical officer and gathered round him a group of younger men, some, like Hadfield, his old students. He returned to his academic duties for about a year, when he left and was appointed professor of psychology at Harvard University—the chair once occupied by William James. In 1927 he left Harvard to occupy the chair that he held at his death at Duke University. His academic career was thus somewhat anomalous. It reflects more credit on the man than on the academic groups involved. At Oxford he gave his full time and unstinted energy to his academic work though the salary was negligible, the status that of a Reader, and the position (as it continues to be) subject to an archaic maldescription. After the Armistice he returned to his Readership. He said to a friend, "I have done my best to serve my country during the war. I have returned, to have my laboratory taken from me." It is impossible to believe that Oxford seriously wished to retain his services.

In 1927 he left Harvard to go to a new and incomplete university. The change no doubt cost him a good deal. But his difficulties at Harvard were of a somewhat different nature from those at Oxford. There he had expressed his crusading impulses in uncompromising attacks on materialists, behaviourists, and others who suffered from that "uncriticized ability" which is characteristic of lesser breeds. And so he found himself at the age of 56 founding a new department of psychology in a new university and far removed from the academic traditions in which he had begun his career. There, in the last eleven years of his life, he succeeded in establishing a faculty that has already given proof of considerable vitality.

McDougall's most prolific literary phase was during his Harvard years. Before that he had written *An Introduction to Social Psychology* (1908), *Body and Mind*, *Pagan Tribes of Borneo*, and *The Group Mind*. The first of these is probably the work that has commanded the widest attention. It is safe to predict that this volume will continue to be studied when much of the more fashionable psychology of to-day has been forgotten. At Harvard he wrote *National Welfare and National Decay*. That volume contained truths that society on both sides of the Atlantic still needs to assimilate. There followed *An Outline of Psychology*, *Ethics and Some Modern Problems*, *The Indestructible Union*, *An Outline of Abnormal Psychology*, and *Character and the Conduct of Life*. In the *Outline of Abnormal Psychology* McDougall attempted the thankless task of presenting and evaluating the various schools of modern psychology. In *Ethics and Some Modern Problems* he returned to his favourite problem of race deterioration and dealt with it more faithfully than acceptably. (The volume consisted of lectures given to American audiences.) The last phase—that at Duke University—saw the publication of *Janus*, *the Conquest of War*, *Modern Materialism and Emergent Evolution*, *World Chaos*, *The Energies of Men*, *Religion and the Sciences of Life*, *The Frontiers of Psychology*, and—finally, last month—*The Riddle of Life*. None of these was a major work. In some ways perhaps the most notable is *Religion and the Sciences of Life*, in which McDougall expresses a religious conviction to which he had been driven by his persistent study of purpose in human behaviour. Possibly the change of attitude represented in that volume emanated also in some measure from a more intimate source: the book was written after his son Alan had been killed in an R.A.F. display; and McDougall was a remarkable family man. Those who had the privilege of knowing him in the family circle cannot dissociate his psychology and sociology from his enviable background of domestic happiness.

If McDougall was a crusader he was by no means narrow (as is the manner of most crusaders) in his objects of interest and of condemnation. His enthusiasm for eugenics and his denunciation of race deterioration were but the counterpart of his Lamarckian zeal. That zeal expressed itself in the amazingly persevering rat experiments. These well-known experiments were intended to show that an acquired aptitude could be transmitted. Pavlov, too, made similar experiments. After accepting his results as positive he subsequently repudiated them. But McDougall was indignant that the great Russian scientist contented himself with a mere matter of four generations, whereas McDougall was already at the twenty-fifth. These experiments, it is believed, are still in progress, and it is to be hoped that they will be carried on till a conclusion one way or another is beyond cavil. In these, as in all his experiments, McDougall was pre-eminently practical and honest.

Over his well-known theory of the instincts he fought many battles, notably with his former ally, A. F. Shand. But it was the behaviourists who drew his most ruthless denunciation in this field, and it was certainly a source of satisfaction to him in his later years to observe the pendulum beginning to swing back from the extreme position it had reached in American psychological thought. Freud and his school were obviously marked out for McDougall's criticism. While he was ready to accept much of what is central in the tenets of that school, he was impatient of a great deal that he regarded as unwarranted assumption. In particular he came to grips with Freud over "the group mind." Of Jung he was, as one might expect, much more tolerant, seeing that they both stood for purposive psychology. It was characteristic of McDougall that when he was over 50 he submitted himself to analysis by Jung. He could not have done so if he had been what some of his critics are prone to assert—arrogant and inflexible. In a lecture at University

College he told the dream which had caused Jung to terminate the analysis, and in the telling he revealed a simplicity and sincerity which few men of his standing could have emulated.

In recent years McDougall gave a good deal of attention to psychic research. He took part in some inconclusive experiments with mediums; his completely impartial summing-up of evidence, pro and con, was very impressive. This same interest caused him to initiate the well-known telepathic experiments at Duke University which are still being carried on by Dr. Rhine.

McDougall was said by some to be dogmatic, but his dogmatism belonged to his manner rather than to his thought. He was a deductive rather than an inductive thinker; fearless when he felt conviction; uncompromising when he detected the illogical or the unscientific; utterly disinterested when he felt impelled to attack the popular or fashionable view; a keen observer of his fellow-men in their most primitive as in their most sophisticated environments; a very loyal friend and a very true gentleman.

H. C.-M.

[The photograph reproduced is by Elliott and Fry, Ltd.]

HAROLD PRITCHARD, M.D., F.R.C.P.

Emeritus Physician, West London Hospital

Dr. Harold Pritchard, whose death we announced with regret last week, was born in 1876 at Chester, where his family lived, and began the study of medicine at Liverpool and went on to St. Bartholomew's Hospital. He took the Conjoint diplomas in 1901 and graduated M.B., B.S.Lond. with honours in medicine in 1904, proceeding to the M.D. in 1906 and taking the M.R.C.P. soon afterwards. He was elected F.R.C.P. in 1926. His first appointment was that of house-physician at Addenbrooke's Hospital, Cambridge, which he held for several years. On returning to London he was appointed junior demonstrator of pathology and casualty physician at Bart's, and edited the *St. Bartholomew's Hospital Journal* for a year or two; about this time he was appointed assistant physician to the West London Hospital and to the Miller General Hospital at Greenwich. In the first weeks of the war Pritchard gave up all civilian work to join the staff of the Duchess of Westminster's Hospital at Le Touquet (No. 1 Red Cross), and received a commission as major R.A.M.C., working there with many Bart's friends until 1917, when he left France to become president of invaliding medical boards for the Royal Air Force in England with the rank of wing commander. After the war he took up again the threads of consulting and hospital practice at the West London and the Miller Hospitals, and was elected consulting physician to the Blackheath and Charlton Hospital, and physician to the King George Hospital at Ilford. His career in civil life, already broken by four years of war, was interrupted by attacks of severe illness, and he underwent several operations, but eventually got back to full working capacity. Throughout these hard trials he maintained the courage and good humour which were part of his nature.

Dr. Pritchard joined the British Medical Association in 1910, and was honorary secretary of the Section of Medicine at the Annual Meeting in Birmingham in 1911 and representative of the Marylebone Division at the Aberdeen Meeting, which broke up on the eve of war. In later years he held office as president of the West London Medico-Chirurgical Society and of the West Kent Medico-Chirurgical Society. He was a very capable all-round physician who habitually carried out most of his own pathological and bacteriological work in private practice. Very loyal to all the institutions he served, and on friendly terms with everybody, he was diligent in attending committee meetings, where his common sense and sound judgment were valued by lay and medical colleagues. He took much interest in Freemasonry, and was a Past Master of the Rahere and Cavendish Lodges. Harold Pritchard had many devoted friends within and without the medical profession; they have lost a charming and sympathetic companion with a keen sense of fun. He is survived by his wife, whom he first met at Le Touquet when she was working there as a V.A.D., and by a daughter and a son. His happiest days were spent with his family at home or on holiday in Devonshire.

F. W. GOODBODY, M.D., M.R.C.P.

Member of Council, British Medical Association

The death of Dr. F. W. Goodbody, which took place in London on November 30 after a long illness, is an occasion of personal sorrow to many engaged in the central and metropolitan activities of the British Medical Association. He had been a member of the central Council and its committees for the larger part of two decades. His principal work was done on the Naval and Military Committee, of which he was a member from 1920 until his death, and chairman for ten years. This is a committee which does not come prominently before the general body of members, because much of its work is necessarily of a confidential nature; but those who knew what Goodbody did there, as well as on the Journal Committee, of which he was a member for twelve years, highly valued his homely wisdom, the rugged simplicity of his speech, his Irish warmth and impulsiveness, his essential modesty, and his friendliness and eagerness to help wherever help was needed.

Francis Woodcock Goodbody was born in 1870, the eighth son of Marcus Goodbody of Clara in King's County and Black Rock in County Dublin. He was educated at Brighton College and Dublin University and studied medicine at Meath Hospital. He qualified in 1894, and took the M.D. of Trinity College, Dublin, a year later, afterwards studying medicine in London, Zurich, and Breslau, before settling down in 1897 as assistant professor of Pathological Chemistry at University College, London. He held this appointment for twenty-two years. The war came towards the end of that period, and Goodbody served as captain, R.A.M.C.(T.), and was attached to the Artists' Rifles, with which he kept contact in later years. At the end of the war he served for a time as Acting Commissioner of Medical Services, Irish Region, and then returned to University College, this time as lecturer in medical chemistry. At the College as everywhere else he was a popular figure, and did much useful work as president and treasurer of the Students' Union.

Although he was not in the practice of clinical medicine, few would have suspected that his work was in the laboratory and lecture theatre, for his interest was in medicine as a whole. While holding it essential to

employ the most advanced and delicate laboratory methods, he deprecated any tendency to rely too much upon results of tests in diagnosis and treatment instead of upon the accumulated knowledge of signs and symptoms. His own excursions into medical literature were principally concerned with the chemical investigation of gastric and intestinal disease, but he acknowledged that this should play only a subordinate part, and said that he would be sorry to give a definite diagnosis of carcinoma of the stomach as a result of gastric analysis.

Dr. Goodbody joined the British Medical Association immediately on qualification and became a member of the Marylebone Division. In 1922 he was elected chairman of his Division, and in the same year honorary secretary of the Metropolitan Counties Branch. He became president of the Branch in 1926, and the unusual compliment was paid of electing him president again after an interval of five years. His second term covered the important year when there fell upon the Branch Council the arduous task of preparing for the Association Centenary in 1932. At Annual Representative Meetings in recent years he presented the report on Service matters. No civil practitioner had a more expert knowledge of conditions in the Services, and he was always zealous to secure proper status and pay for medical officers engaged with the Forces. Soon after he became chairman of the Naval and Military Committee the Warren Fisher Committee was set up, and Goodbody had most to do with the shaping of the evidence which the Association gave. The shortage of medical officers for the Services was at that time a matter of concern, and Association subcommittees were established for each of the three Services—the R.N.M.S., the R.A.M.C., and the R.A.F.—and on each of these Goodbody served for two years. It was at his instance that certain aspects of the Indian Round Table Conference affecting medical services in India were brought to the Council and a special committee appointed. He served also on the Central Emergency, Parliamentary Elections, and other committees.

He married in 1901 Olga, the daughter of the late Dr. George Harley, F.R.S. She died two years ago. A son and a daughter survive them.

NOEL DEAN BARDSWELL, M.D., F.R.C.P.

The death of Noel Bardswell closes a chapter in the evolution of tuberculosis treatment from an activity chiefly of voluntary and private sanatoria to one administered largely by the State. After graduation at Edinburgh in 1895 he became house-physician to the Royal Infirmary, Sheffield, and grew interested in the Nordrach treatment of pulmonary tuberculosis. He persuaded the authorities to set aside six beds for this purpose, and as in these early days a prominent feature of the Nordrach regime was overfeeding, Bardswell began to investigate problems of diet. This work attracted the attention of Sir James Kingston Fowler, and Bardswell, with Dr. J. E. Chapman (now of the Ministry of Health), went to London, where they carried out in the laboratory of University College Hospital work on the metabolism of Fowler's patients.'

In 1901 Bardswell went to Nordrach-on-Dee Sanatorium in Scotland as second physician, and a year or two later took over from Dr. Burton Fanning the well-known private sanatorium at Mundesley, Norfolk, in association with Dr. Chapman. When in 1906, after many delays, King Edward VII's Sanatorium was opened at Midhurst, Bardswell became its first medical superintendent; this selection was the measure of his repute at that period. He was a member of the Astor Committee which reported in 1912 and recommended the Edinburgh dispensary plan as the foundation of anti-tuberculosis measures. He remained at Midhurst, except for war services, until 1917, and on retirement was made a Member of the Victorian Order. This ended the private phase of his career, and henceforward, until the last few years, he was an official.

The London Insurance Committee had become the metropolitan authority for the treatment of tuberculosis, and Bardswell succeeded Dr. Squires as its medical adviser. In 1921 this function was merged in the London County Council, with whom Bardswell continued to serve until his retirement in 1936. He was responsible for the supervision of all the L.C.C. patients, and his period in charge of the service saw an enormous development of facilities for the treatment of London cases, not only in the county area but in institutions as far afield as Cornwall and Suffolk. On his experience at Midhurst he compiled (with Mr. J. H. R. Thompson) a statistical examination of the results of sanatorium treatment—a model for surveys of this kind—and concluded that something further was necessary than the treatment then in vogue. These adumbrations preceded collapse therapy, and Bardswell's later interest in boarding-out contact cases, the Spero workshops for tuberculous men, and other social measures against the disease, which he had first encountered in Edinburgh under Sir Robert Philip. On leaving County Hall, Bardswell undertook for the National Association for the Prevention of Tuberculosis a two-year survey of tuberculosis in Cyprus. Alarmist reports about its incidence were found to have been exaggerated, but he tested samples of the population with tuberculin, established the epidemiology in two interesting monographs, and his recommendations have been accepted by the Colonial Office. He had hoped to make further surveys of other British Dependencies in this way.

Bardswell solved the problem of mental transition from the private consultant to the public official by never undergoing it. He remained an oddly informal character, who looked and dressed like a rustic squire, and frequently wrote his letters in pencil. His nomadic instinct never died. He enjoyed his visits to Cyprus, and seemed equally at home with great officials of State, Greek physicians, Turkish healers, and village muktars. His skilful subtlety made possible the intricate social inquiries into a disease which is hidden and feared. His wife, who with four children survives him, has achieved a reputation in archaeology.

THE LATE SIR HENRY GRAY

Dr. Thomas Fraser, C.B.E., D.S.O., D.L., writes:

I was much distressed to learn from two sources in Montreal that I had perpetrated an error of fact in the obituary of Sir H. M. W. Gray written by me and published in your issue of October 15. Therein I stated that the name of Professor Archibald of Montreal appeared on the piece of plate presented to Sir Henry by surgeons who served under him in France. I can only account for this by a lapse of memory, as I last saw the plate some sixteen years ago, but I wrote what I did believing it to be true. Sir Henry was consulting surgeon to the Third Army for several years; and had I recalled that the Canadian Corps served mainly in the First Army (which I knew of as I was in that Army in charge of a casualty clearing station for six months) the implication that Mr. Archibald served under Sir Henry would not have been suggested. The time limit which is imposed on the contributor of such a notice (which is expected to appear in the next issue of the *Journal*) demands haste and dependence on memory, particularly when the death of the subject of the notice occurs in the second half of the week. In this instance

my memory has let me down. I unreservedly withdraw the statement and offer my apology to Professor Archibald for the distress it may have caused him. In the event my phrasing following the above statement was unfortunate, as it bore the possible implication that I was at least hinting at disloyalty on the part of Professor Archibald to an old chief. Such disloyalty never entered my mind. I was for over thirty-three years a member of the teaching staff of a Medical School of some antiquity, where, on several occasions during my time, a junior was preferred for a professorial post, and I cannot recall a charge of disloyalty ever being imputed under such circumstances or the bona fides of the selectors being doubted. I regret, however, that it seemed possible to draw the implication above mentioned from the words I used. Never by word or in letter to me did Sir Henry resent the appointment of Mr. Archibald to the professorship in McGill University.

Brigadier-General F. E. Burnham writes from Halcyon Springs, Arrow Lakes, British Columbia:

The death of Sir Henry Gray marks the passing of another of the long line of war veterans who have gone to their reward. Those who have passed on may be spared the knowledge of the futility of their sacrifices during that great struggle. On the Western Front I had no opportunity to meet Sir Henry, but was in close touch with many who had served with him. All spoke of him with admiration and affection. Sometimes one may judge a man better by what his friends say of him than from a short acquaintance. I realized that Sir Henry Gray was a great surgeon and cultured gentleman. More than that no one can say. I have always advocated that the door of Canada be kept ajar for distinguished members of the profession who might come from abroad. Any country which will now take a hundred scientists, physicians, artists, and musicians from among the refugees of Central Europe will be immensely enriched thereby. When Sir Henry Gray came to Canada I felt that it was a great advance for medical education.

THE LATE SIR ROBERT JOHNSTONE

At the meeting of the Senate of Queen's University of Belfast, on November 23, a resolution of sympathy with Lady Johnstone in the death of her husband, Sir R. J. Johnstone, was proposed by Professor W. W. D. Thomson and passed in silence. "As a rule," he said, "doctors are bad citizens inasmuch as they stand as a body aloof from civic affairs and national politics. The medical profession, however, has in every country provided men of affairs who have risen high in the council of the nation, but with scarcely any exceptions such men have found the practice of medicine incompatible with their political and public duties. Sir Robert Johnstone was an exception to this rule, and maintained the closest relations with his profession as a consulting gynaecologist, as professor of gynaecology in this University, as surgeon to the Royal Victoria Hospital and the Royal Maternity Hospital, whilst giving much of his time to the Parliament of Northern Ireland and its commissions, to the medico-political activities of the British Medical Association, to the work of the General Medical Council as our representative, to the chairmanship of the Board of Management of his old school, the Royal Academical Institution, and to the work of the Senate and its committees. Sir Robert Johnstone worked not for money, not for fame, not for award or the applause of men, but for the joy of the working. The last year of his life saw the recognition of his achievements, and honours were showered upon him—the presidency of the British Medical Association, a knighthood, the honorary fellowship of the Ulster Medical Society, and the honorary degree of Doctor of Laws awarded by this Senate, but, alas! never conferred. The mothers of Ulster loved Sir Robert for his gentle and wide humanity and for his skill in their hour of need; his students admired the deft and decisive hands which operated so quickly and with so little shock; his colleagues were attracted by his brilliant intellect, his broad outlook and his freedom from bias, his sound judgment, his wise counsel, his sense of humour, and his wide interests. To those privileged to attend him during the last few months the unruffled calm and the dauntless courage of the man as he faced the inevitable will never be forgotten. To few men did the years of retirement present so pleasant a prospect. He was still at the zenith of his powers, congenial work was waiting for him, a beloved companion at his side, ever ready to help his leisure, to indulge his love of literature, and to ride his numerous hobbies. And yet no word of self-pity escaped his lips as he saw the 'Delectable Mountains vanish in the Mist.' . . ."

"A. J. C." sends the following tribute to the memory of NEALE LEO LOCHRANE, M.D.: A year ago died a colleague and friend whose loss was too keenly felt to let it pass unnoticed by the profession he loved. Educated at Stonyhurst, Edinburgh University (where he was a boxer of some repute), and Rome, he qualified in 1912, served as H.P., H.S., and gynaecological H.S. at the Glasgow Infirmary, and took his M.D. in 1914. In August, 1914, he was attached as M.O. to the 3rd Royal Scots, and in June, 1915, he was posted to the 12th Hants Regiment on his request to be sent over-seas. Service followed in France and Salonika, where he was mentioned in dispatches for "distinguished conduct in the field." He was finally invalided home in 1918 seriously ill with malignant malaria and phlebotomus fever. After a prolonged convalescence Lochrane passed the primary examination of the F.R.C.S. and ultimately settled down in practice in Stroud, Gloucester. There he acquired a great reputation for his immense industry, keenness, and unsparing devotion to his patients. Especially was he beloved by the poor for his charitable work among them, but this was a secret he zealously guarded during his life-time. His surgical ability was recognized by his appointment as surgeon to the Stroud General Hospital, an honour which gave him great personal satisfaction. His strength sapped by the work he loved, and by his unsparing giving of himself, he developed a pulmonary neoplasm early in 1937. A very severe operation and six months of pain brought the inevitable end, but not before he gave an example of how such an ordeal should be passed through. This last trial was lightened by the most devoted nursing of his wife. Of few of us can it be said that we have hurt no one by action or word; that we have not merited rebuke or caused resentment. Leo Lochrane was such a man—unknown to the world at large, but loved by all who understood him and worshipped by those he served.

Dr. WILLIAM VALENTINE of Earlestown, Lancashire, died recently at the age of 78. He was educated at Wigan Grammar School, proceeding to Glasgow University for his medical training, and qualified in 1885 as L.R.C.P., L.R.C.S., and L.M.Ed. Dr. Valentine started professional work in Earlestown fifty-three years ago and built up a large practice by his devotion to duty, winning the esteem and affection of his patients, as shown by the crowded church at his funeral service. He held many public appointments and was the prime mover in raising a fund to build a cottage hospital in his district, and lived to see it greatly enlarged in the form of the Earlestown War Memorial Hospital. During the great war he was medical officer at the Lady Gerrard's War Hospital at Garswood Park. Dr. Valentine joined the British Medical Association fifty years ago, was an original member of the St. Helens Division, and had been chairman and a member of the Executive Committee. He was a widower and leaves a grown-up family to mourn his loss.—A. A. W. M.

We regret to record the death on November 25, at Hereford, of Dr. GEORGE AUGUSTUS TULLIS at the age of 76. Dr. Tullis was educated at the University of Edinburgh, where he graduated M.B., C.M. in 1884. He

proceeded M.D. (with honours) in 1887, and for his thesis discussed Mediterranean gastric remittent fever. For a time he was a member of the General Council of his university. For some years Dr. Tullis was in practice at Southsea, and then, in 1906, settled in Winchester, where he became honorary physician to the Royal Hants County Hospital and medical officer to the Winchester Dispensary and to Clayesmore School. He had been a member of the Society for the Study of Diseases in Children, the old Clinical Society of London, and the Section of Disease in Children of the Royal Society of Medicine, and had acted as medical referee to several insurance companies. In 1903 he read a paper on infantile scurvy before members in the South-East Hampshire district of the Southern Branch of the British Medical Association, a report of which was published in the *British Medical Journal*. Dr. Tullis was appointed consulting physician to the Royal Hants County Hospital when he retired in 1933, and went to live at Hereford. He had been a member of the British Medical Association for fifty-four years, joining in 1885, the year after he qualified.

The death has occurred of Dr. GEORGE WILLS BLOMFIELD of Pontefract, who had practised in that town for fifty years and had been a member of the Wakefield Division of the British Medical Association for the same length of time. He was taken ill in Aberdeen while visiting a daughter and died there on November 28. A native of Hastings, Dr. Blomfield studied medicine at the London Hospital and qualified as M.R.C.S., L.R.C.P., and L.S.A.; he took the M.D. degree of Durham University in 1903. Soon after qualifying he became medical officer at Pontefract Infirmary and then started practice in the town with his brother, the late Dr. E. E. Blomfield. For the last thirty years Dr. G. W. Blomfield had been medical officer in charge of the Military Hospital at Pontefract Barracks. He was made an honorary associate of the Order of the Hospital of St. John of Jerusalem in recognition of long service as an examiner for the St. John Ambulance Association, and he had been chairman of the local Motor Ambulance Committee. He leaves two sons, both of them members of the medical profession, and three daughters.

The following well-known foreign medical men have recently died: Geh. Rat Professor RICHARD GREEFF, for many years director of the Eye Clinic at the Charité, Berlin, aged 77; Dr. JACOB HAVERSCHMIDT, formerly professor of children's diseases and director of the Wilhelmina Children's Hospital at Utrecht; Dr. ANDRÉ RICHE, a Paris alienist, aged 69; Dr. FREDERIK VOGELIUS, an eminent Copenhagen physician, aged 72; and Dr. CARLOS COMETTO, a prominent paediatrist of La Plata, aged 60.

Medical Notes in Parliament

The House of Commons this week discussed the Government's proposals for a voluntary national register and also the report on the Official Secrets Act in relation to members of Parliament.

The second reading discussion on the Cancer Bill is proposed for December 12. Dr. Elliot promised to discuss it with the Conservative Health and Housing Committee on December 7. He also arranged to confer on the same Bill that day with representatives of municipalities.

The text of the Workmen's Compensation Acts (1925 to 1934) Amendment Bill, introduced by Miss Ward and issued on December 6, contains proposals for compensation for miners' nystagmus.

There was laid on the table of the House of Commons on December 6 the Registration of Stillbirths Regulations (Scotland), 1938.

Medical Services in Air Raids

Sir FRANCIS FREMANTLE, on November 30, moved that medical services were a cardinal factor in the national preparation in case of air raids, and that a detailed and complete scheme should be planned without delay under responsible co-operation between the British Medical Association, other representatives of the medical profession and of the hospitals, and the Government Departments concerned. He said a scheme should be devised covering, first, the personnel of the medical and auxiliary services; secondly, the institutions and their equipments; thirdly, method of communication between different parts of the medical services and the civilian defence service; and, fourthly, the ambulance service for the transport of the wounded. In June of this year a special branch of the Ministry of Health was created to deal with emergency medical services, and Dr. Hebb, Director-General of Medical Services at the Ministry of Pensions, was transferred to it. This ought to have a considerable increase of staff, and much required to be done. At the request of the Committee of Imperial Defence the British Medical Association started a register of members of the profession in May, 1937. That register must be revised every year, and the Government had undertaken the cost of its revision. The result of the questionary issued by the Association showed that 95 per cent. of the profession were prepared to give their services in one way or another. It was agreed that Government Departments and hospitals should be staffed in case of an air raid only through and according to this register. Nevertheless irregular applications still continue to be made from some Departments.

One difficulty which arose when the crisis came was uncertainty on the actual position and equipment of, and the demands that would be made on, first-aid posts. In London, according to the Home Office, first-aid posts were not to have any medical officers. Patients would be sent on to the general hospitals, which had been cleared of ordinary patients so that they might be used as clearing stations. If there were no medical officers at the first-aid posts the casualty clearing stations would be blocked with minor cases. In an air raid, beside wounded members of the civil population there would be cases of nervous breakdown, hysteria, mania, and mental disorder with which it would be difficult to deal. Some of the primary cases would need morphine, which non-medical people could not be allowed to administer. Sir Francis was sure that the supply of medical men would suffice for first-aid posts in London, but the question was whether it would suffice elsewhere. The Home Office said the first-aid posts had nothing to do with the Ministry of Health, although that Ministry had charge of hospitals and medical personnel. Why should first-aid posts be under the Home Office when ambulances, stretcher squads, casualty clearing stations, and hospitals were all under the Ministry of Health? To these problems had been added that of evacuation.

Co-operation was needed between the two Departments and the medical profession. The position was so serious that the British Medical Association, the Royal College of Physicians, and the Royal College of Surgeons sent a joint deputation to the Minister for Co-ordination of Defence on November 8. A full statement put before the Minister by Sir Kaye Le Fleming showed that the British Medical Association had established a central emergency committee representative of every branch of medical practice for the supply of medical services. They still required co-ordination of the actual demand, and the Minister promised that this would receive consideration.

The medical officer of health was commonly forgotten when considering medical services, especially in the countryside. He was responsible for the services in schools and in county hospitals and for the whole Poor Law system. These would be much affected by air raids. The medical officer for one county recently had to close a village school because of a virulent outbreak of diphtheria, yet he was informed that one hundred children were to be evacuated from that village. According to the air raid handbook the medical officer of

health was the controlling official of first-aid parties, first-aid posts, and ambulances, in addition to his ordinary work. What was his status in regard to voluntary hospitals and to municipal and auxiliary hospitals? What was the position in connexion with the St. John Ambulance Brigade and the Red Cross Societies? The Committee on Evacuation, presided over by Sir John Anderson, in its report made in July devoted only two lines to health services. Nurses, dispensers, laboratory workers, clerks, stretcher-bearers, and messengers would all have to be brought in with proper organization, and if during an air raid telegraph wires and telephones were broken down special communication must be organized for the medical services.

THE POSITION OF HOSPITALS

Sir HENRY MORRIS-JONES seconded the motion. He asked if the first-aid posts in London were to be in trenches in the parks or in annexes to the big hospitals, or where they ought to be—in concrete underground shelters. In London, he understood, fifteen voluntary hospitals and nineteen municipal hospitals had been earmarked for casualty clearing stations. A large number of voluntary hospitals, including some big teaching hospitals, tuberculosis hospitals, children's hospitals, and maternity hospitals, were to carry on as usual. He hoped that hospitals in London of whatever kind, unless clearly outside the radius of possible bombardment, would evacuate all the sick to their homes or to hospitals in the country. The boards of management of hospitals were seriously concerned about their position. Were preparations being made to have underground operating theatres in the clearing hospitals? The question of finance required attention. Many orders given by hospitals in the last crisis were without legal sanction, and King Edward's Hospital Fund for London had made a distribution of £100,000 in advance of this year's grant. Were the hospitals and the country adequately equipped for an emergency in drugs, dressings, blankets, etc.? Thousands more stretchers were required, and these should be of a uniform pattern. Motor-ambulance drivers should be trained to drive with gas masks on and lights dimmed. More use should be made of water transport on the Thames and the canals. The staffs of hospitals should know whether they would be wanted in hospitals, in the territorial service, or in their own civilian occupation. There should be a mobilized force of doctors for transfer to any centre which had suffered intensive bombardment. Were medical students to be kept in London or sent to the country to become fully qualified?

Dr. EDITH SUMMERSKILL said that in the last crisis she found many cases of hardship among patients who were evacuated from casualty clearing hospitals and sent to their homes. Hospitals should be built in the country immediately or buildings should be earmarked for patients. The Home Office or the Ministry of Health had made the fantastic suggestion that tents should be used as casualty hospitals, but the British Red Cross in Abyssinia had pointed out that tents were a favourite target and that there would be no protection against splinters, gas, or blast. In one hospital in London with 2,000 beds 400 people were expected to be brought in every hour when the crisis came. That hospital found great difficulty in obtaining instruments, cotton-wool, dressings, and morphine. They wanted half a ton of plaster-of-Paris for treatment of fractures, but could only obtain 2 cwt. That hospital could not get splints, so the medical superintendent set the staff to work sawing boards to make them. There was also a lack of bleaching powder.

GOVERNMENT REPLY: REGIONAL ORGANIZATION

Mr. BERNAYS, replying for the Government, said Sir Francis Fremantle had inaugurated a most valuable debate. The Government had a plan for the expansion of the medical services in time of war. It was a regional organization for dealing with casualties on the basis of first making beds available in existing institutions and then expanding by means of satellite annexes. There were registers of doctors and of nurses and a scheme for filling all needs from those registers on a unified basis. The Ministry of Health was at work on further plans which would form the basis of regional discussion. If war had come medical personnel would have been directed, through the Central Emergency Committee of the British Medical Association, to places where the needs were greatest. The register compiled by the British Medical Association was a file, not an order to move. It was impossible to give the order to move until the air raids began. At the outbreak of war the best place for a doctor was with his own patients, and the most obvious air-raid dressing station was a doctor's own consulting room. It was most important to avoid immobilizing doctors by concentrating them in one place before there was actual need for their services. Proper co-operation was most important, and a big step had been taken towards it by arranging that not all the Territorial Army hospitals originally designated would be mobilized at the outbreak of war. That would make hundreds of doctors and nurses available for the treatment of civilians. Sir John Anderson was giving attention to the question of the requirements which might be conflicting. With regard to nurses arrangements were made during the crisis to put hospitals in touch with the local nursing organizations, but more complete organization was necessary and a central register was being established of nurses and nurse auxiliaries who would be available in time of war. A plan was under consideration for recruitment of additional nurses and for training girls to do first-aid work.

The Government was conscious of the need for expanding the potential hospital service, and as a preliminary had surveyed existing hospital accommodation in England and Wales. A similar survey was made in Scotland. If hostilities had started there would have been 150,000 beds available for air-raid casualties, and at the end of a fortnight that number would have increased by 100,000. The Home Secretary appointed a committee of medical experts under the chairmanship of Sir Charles Wilson to consider what was required for the casualty organization in the London area. Its conclusions were embodied in a circular which was sent to every county council, county borough council, and voluntary hospital authority in the country informing them that every hospital must be ready to clear as many beds as possible on receiving warning that an emergency had arisen, and also must prepare schemes for expanding their hospital accommodation. Later the Ministry of Health made direct contact with hundreds of hospitals. The Ministry could not allot a precise part to every one of the 3,000 hospitals in the country, but it intended to work out a detailed war book or scheme of operations with which the hospitals could conform.

DOCTORS TO STAFF AIR-RAID POSTS

He appreciated the importance which was placed upon air-raid posts. The Ministry of Health had now been given responsibility for those posts and also for the ambulance services, and it was the policy of his Department that every air-raid post should be staffed by a doctor. The best man for the post was probably the man in a local practice in the area where the post was established. He was not in a position to reply to-night to the question whether air-raid posts would be in underground shelters. A circular dealing with these questions would shortly be issued to local authorities. Local authorities would continue to be responsible for preparing schemes for ambulance organization and also for first-aid posts, but the Ministry would see that these were complementary to the hospital service and that the first-aid posts were placed and designed to relieve the hospitals so far as possible.

In additional equipment the Ministry had ordered 50,000 beds and mattresses and 90,000 stretchers. They expected final deliveries in a few weeks. The London County Council had been authorized to spend £4,000 in providing ten of their large fever hospitals with surgical equipment, and the question of difficulty in getting necessary medical requisites was actively in hand in his Department. The majority of stores could be used in the future and did not involve a loss. The Ministry of Health would consider exceptional claims for loss if the voluntary hospitals would make these. He gave details of preparations made to evacuate patients from London from the general hospitals, and said they were to be removed to smaller towns approximately fifty miles distant.

HOSPITAL ACCOMMODATION

Hospital officers had been reviewing the hospital accommodation in their regions to determine where it must be increased and improved. The next step was for hospital officers to get into touch with all hospital authorities and agree what part they would be expected to play. Local discussions had been arranged, and it was hoped shortly to arrange regional conferences at which proposals could be considered with the hospital authorities and representatives of the medical profession. As soon as plans were settled equipment would be distributed and work undertaken to improve facilities. The next stage would be to consider what was required in completely new hospital accommodation. A decision had not yet been taken on the use of tents.

He agreed with Sir Francis Fremantle on the importance of medical services in civil evacuation and that a strain would be thrown on medical services in the receiving areas. The Department would seek the assistance of the medical profession in considering what emergency services must be provided. The Society of Medical Officers of Health was formulating suggestions. It would be necessary to concert plans with the British Medical Association for transferring doctors to country districts where an influx of new patients called for the strengthening of the medical organization.

Captain ELLISTON said the compilation of the register by the British Medical Association was an act of great patriotism. If great masses of the population were to be evacuated they must take their doctors with them. He hoped they would avoid the mistakes of the last war, when leading consultants, instead of becoming consultant physicians in military hospitals, did what was almost first-aid work at the front. He was sure that if the British Medical Association was responsible for the arrangements to use the services of medical men to the greatest advantage steps would be taken to protect the practices of doctors who went on active service.

The resolution proposed by Sir Francis Fremantle was then carried unanimously.

Hospital Service in Air Raids

In the House of Lords on December 1 LORD GREVILLE called attention to the hospital service of London in an emergency, and moved a resolution calling for a detailed scheme to be drawn up and issued to hospitals, giving exact instructions on what steps should be taken in case of air raids. He said that the question of air-raid precautions and the treatment of casualties had been under consideration for some two years, and the voluntary hospitals, through the Voluntary Hospitals Association, had endeavoured to get some information from the Government Departments on the subject. If there had been a little less secrecy and a little more consultation in the past few years a great deal of the rush and expense of a few weeks ago would have been avoided. The hospitals had never really had a chance of expressing an opinion on the Government's scheme, and had not yet been asked to express one. He thought that fundamentally parts of the scheme were wrong. He did not think it was right to fill the London hospitals with all the leading surgeons in the profession. London would become a front-line trench, and, therefore, totally unsuitable for collecting large numbers of casualties within its borders. He hoped that the Home Office, the Ministry of Health, and the authorities concerned with the evacuation and treatment of the wounded would really consult the hospitals a little more and give serious consideration to the question of the overcrowding of London hospitals.

VISCOUNT GAGE, replying for the Government, said it had been freely admitted that the crisis did catch the Government incompletely prepared in several directions. Having recounted what had been done and what the hospitals had been told, he added that there were matters on which the Government was in considerable difficulty. On the question of medical staff, owing to their long training, the number of qualified doctors in the country could not suddenly be expanded, even if the services of some of the advanced medical students were utilized. As opposed to the last war there were two entirely new medical problems. First, they had not only the service needs to think about, but the additional needs of these areas in which the evacuation of London generally was to take place; and, secondly, there was the question of air-raid casualties in London itself and elsewhere. Not unnaturally there was considerable divergence of expert opinion as to the extent of the medical demands that these casualties would make, and that must really depend on events. There were only two certain principles to guide them—first, that every doctor in the country must be employed to the best possible advantage, and, secondly, that the doctors must possess a considerable element of mobility. He could not say that the plans for the proper utilization of medical staff had even now been worked out completely, but they were being worked out and, had the crisis developed, the registers already in the possession of the British Medical Association would, to a large degree, have prevented unnecessary waste of effort. The organization of mobile medical units had already begun. In the course of a few weeks all the hospitals would be visited, detailed plans would be agreed with them, and they would know exactly what their task would be. He understood, though he could not give a precise answer, that the question of the evacuation of hospital patients was being considered.

The motion was withdrawn.

Criminal Justice Bill

In the House of Commons on November 29 Sir SAMUEL HOARE moved the second reading of the Criminal Justice Bill. He said that in almost all cases imprisonment was the worst possible way of dealing with uncontrolled, objectionable, and sometimes dangerous young people. Prison, particularly for short sentences, often turned them into little heroes. It made a dangerous break in their lives and gave them no training for the future. One of the main objects of the Bill was to effect an immediate reduction in the number of young persons received into prison and to provide for the ultimate abolition of imprisonment as a method of treatment for young offenders convicted for such offences as were dealt with by courts of summary jurisdiction. It was proposed to raise the age to 16, below which no child could be sent to prison after conviction; that in future no young person between 16 and 17 could be sentenced to imprisonment without a certificate from the court that the young person was of a depraved and unruly character; and that no summary court should send to prison anyone between 17 and 21 unless a careful investigation had been made into the individual case.

REMAND CENTRES

They proposed a series of new institutions for dealing with the young. For the young before conviction there would be two kinds of remand homes. The first would be for children under 14, to deal with the problem cases, the abnormal cases, which needed careful medical investigation and often mental treatment. There would also be remand centres for young persons between 17 and 23, where, again, there would be opportunities for the investigation of problem cases at older ages, and also the kind of mental investigation, in certain cases, as in the remand homes for the younger children.

MENTAL TREATMENT FOR OFFENDERS

The Bill also contained provisions for making it easier to provide medical examination and mental treatment for the old offender. Where the old could not afford to pay there was a provision under which funds could be provided by the State, though where the offender could afford to pay the sum would be recovered from him. It was proposed to transfer the Criminal Lunatic Asylum of Broadmoor from the direct control of the Home Office to that of the Board of Control. This change was not being made because there was any fault to find with the administration of Broadmoor, but because they felt that, with the growing development of this branch of medical science, it was better to bring all the mental institutions under a single control. The power of release, as was inevitable, would remain in the hands of the Home Secretary.

They were abolishing the anomalous description "criminal lunatic." He had never thought that there was any justifica-

tion for a description of that kind, for the essence of crime was that a man or woman must know what he or she was doing, and, in the nature of things, a lunatic could not be responsible for his actions. Accordingly, in future, Broadmoor would be called the State Mental Institution, and the inmates State mental patients. They had accumulated a considerable body of evidence on this side of penal treatment. They had had in progress in recent years a very scientific investigation into a number of cases of young offenders in Wormwood Scrubs. He hoped to be able to publish the report in the immediate future, but the conclusion which it reached was that here again it was dangerous to generalize and to regard mental treatment as a panacea against all sorts of evils, but that in a number of selected cases, particularly in the cases of the young, it undoubtedly did good. They felt that the time had come to make these proposals for a definite step forward along this line of alternative treatment in dealing with offenders, and particularly young offenders.

ABOLITION OF CORPORAL PUNISHMENT

He was attempting to approach these problems from the angles of prevention and reformation. In such a scheme there was no place for the remnants of a period which looked at crime principally from the angle of retribution and deterrent punishment. He therefore proposed to sweep away the remnants of former dispensations, now little more than the stage properties of Victorian melodrama—penal servitude, hard labour, ticket of leave, and the name "criminal lunatic." The Bill contained a provision to enable them in the future to do away with the Prison Commissioners and to merge the prison administration in the general administration of the Home Office. Consistently with this attitude he was proposing the abolition of corporal punishment except for cases of mutiny and gross assault in prisons, which were very rare, a year or even two passing without a single case. He proposed the abolition of corporal punishment because it was out of date and did not deter the particular individual on whom it was inflicted from offending again or protect society from similar crimes in future. The Cadogan Committee had come unanimously to the conclusion that the time had arrived for abolition.

SUPPLY OF PSYCHIATRISTS IN THE PROVINCES

During the debate Mr. BENSON said he was very pleased that power was taken in Clause 19 to supply mental treatment for those delinquents who required it. He was afraid that the Home Secretary's advisers, living and working in London, might not realize how difficult that clause would be to work in the provinces unless the Home Office took very strong steps and supplied plenty of initiative. There was any number of highly trained psychiatrists and specialists in London, but the whole of the provinces were an absolutely arid waste so far as they were concerned. They might get an odd psychiatrist in large towns like Manchester or Liverpool, but there was nothing like the supply of trained doctors in the provinces that there was in London. Clause 19 could not be worked unless the Home Office was prepared to take steps to supply that shortage, the reason for which was obvious. These were specialists, and specialization in practice generally depended on hospital work in the towns where the practice was. It was very difficult for a London-trained specialist to go, say, to a northern town or outside London and build up a practice, and until some steps were taken to enable London-trained doctors to do so there would not be the supply of psychiatrists required if the Bill was to work properly.

There were methods by which this difficulty could be overcome. There were a number of child guidance clinics up and down the country, some of which already had psychiatrists, generally part-time, and the psychiatrists themselves were attempting to build up a practice in the towns while they were working for the child guidance centres. A number of other child guidance clinics would have part-time specialists if they could afford them. If the Home Office was prepared to co-operate wherever possible with child guidance clinics and with progressive education authorities for the provision of this service a great deal could be done at a not overwhelming expense. He gathered from the Bill that psychiatric training was to be provided at the State remand centres wherever there was one, and these centres, he thought, could be made the nucleus for the development of psychiatrist services on a far wider scale than the remand centres themselves. He hoped that there would be a number of these centres in the provinces, but there would not be one in every small town. They should utilize the trained doctors in these remand centres, use them as travelling psychiatrists to go from court to court, or to beat the service of any court within a given area, again co-operating with child guidance clinics and education committees, and all the time trying to establish part-time services.

After further discussion the debate was adjourned to December 1.

The debate was resumed on December 1. Sir ALFRED BEIT said that a complaint which he thought was justified was of the difficulty of access to medical opinion other than that of the prison doctor. In some cases these doctors were first-rate men. Nobody could deny, having seen the hospital at Wormwood Scrubs, that they had built a first-class establishment complete with operating theatre at that prison, but prison doctors varied in knowledge and in quality, and they sometimes gave him the impression of reluctance to consult outside doctors.

Mr. GEOFFREY LLOYD said that the Home Office was investigating better ways of serving food in prison, and hoped to tackle more scientifically the question of diets a little later. An independent medical opinion was rarely asked for, but it was granted in proper cases.

The Bill was read a second time and sent to a standing committee. The financial resolution in connexion with the Bill was also agreed to in committee.

Summary of Cancer Bill

Dr. ELLIOT, supported by the Secretary of State for Scotland and other Ministers, presented the Cancer Bill on November 30. The Bill's full title is "A Bill to make further provision for the treatment of cancer, to authorize the Minister of Health to lend money to the National Radium Trust, to prohibit certain advertisements relating to cancer, and for purposes connected with the matters aforesaid." The first clause states that it shall be the duty of every county and county borough in England (in Scotland of every county and large burgh), either singly or in regional groups, to secure adequate facilities for the diagnosis and treatment of persons suffering, or suspected to be suffering, from cancer, and to submit within one year from the commencement of the Act or such longer period as the Minister may allow arrangements which shall provide: (1) facilities for the diagnosis of cancer; (2) facilities for treatment either in hospitals maintained by local authorities or in voluntary hospitals; (3) for the payment in such cases as the council considers necessary of all or any travelling expenses (including the travelling expenses of a companion) reasonably incurred by persons for the purpose of availing themselves of the services provided under the arrangements; (4) for such other matters as appear incidental to or consequential on the arrangements for the treatment of cancer.

CONSULTATION WITH HOSPITALS AND DOCTORS

Before submitting its arangements to the Minister each council shall consult, first, the Radium Commission; secondly, representatives of the governing bodies and the medical and surgical staffs of the voluntary hospitals providing services in or for the benefit of its area; and, thirdly, such local organizations of registered medical practitioners as the council considers to represent the opinions of such practitioners practising in its area. The Minister may approve with or without modifications the arrangements submitted to him by a council, and it will then be the duty of the council to carry these into effect. From time to time, or when required by the Minister, the council may make and submit to him alterations or extension of the arrangements.

A special proviso reads: "Nothing in this section shall authorize the establishment by any council of a domiciliary service by medical practitioners."

Certain sections of the Public Health Act, 1936, and the Public Health (London) Act, 1936, are made applicable to the new service, which will (*inter alia*) enable the local authority to recover the expenses of treatment in suitable cases. In Scotland such recovery will be possible under the Local Government (Scotland) Act, 1929. The Minister may require two or more councils to combine to such extent and on such terms as he may, in default of agreement between the councils concerned, direct. A joint board or joint committee discharging the functions of two or more councils shall have power to appoint such persons as it thinks fit to be additional members of the board or committee.

The memorandum attached to the Bill declares that its purpose is to establish a cancer service under which, in every part of the country, modern facilities for diagnosis and treatment of cancer will be available. At the present time, the memorandum continues, such facilities exist in some voluntary and in some municipal hospitals, but in many areas the provision is far from adequate. Semi-officially it has been explained that centres with teams of specialists and clinicians will be established for the diagnosis of patients submitted to them through the councils or practitioners or who may offer themselves for examination.

PURCHASE OF RADIUM AND CYCLOTRON APPARATUS

Clause 2 of the Bill provides for an Exchequer grant approximately equivalent to 50 per cent. of the total additional expenditure incurred by local authorities. It is explained semi-officially that in poorer localities the percentage of this grant will be considerably higher.

Clause 3 authorizes the Minister to lend up to £500,000 to the National Radium Trust for the purchase of radium and other radio-active substances and of equipment for radio-therapeutic treatment. No money is to be lent for this purpose after ten years from the commencement of the Act. It is explained semi-officially that loans will be available for purchasing deep *x*-ray apparatus and cyclotron apparatus, which will probably be retained centrally and lent as required. In anticipation of the passage of the Bill a contract has been made for the purchase of radium from Canada.

ADVERTISEMENT BAN

Clause 4 prohibits under penalty—in the case of first conviction a fine not exceeding £50, and in the case of subsequent conviction a heavier fine or imprisonment—the publication of any advertisement (*a*) containing an offer to treat any person for cancer or to prescribe any remedy therefor, or to give any advice in connexion with the treatment; or (*b*) referring to any article or articles of any description manufactured, produced, imported, sold, or offered for sale in terms which are calculated to lead to the use of that article or articles of that description in the treatment of cancer. A proviso is added that it should be a valid defence in any proceedings under the clause to prove that the advertisement was published only to registered medical practitioners, registered nurses, registered pharmacists and authorized sellers of polsons, persons undergoing training with a view to becoming registered in these occupations, or persons carrying on a business which includes the sale or supply of surgical appliances. It is also provided that it shall be a defence to prove that the advertisement was published only in a publication of a technical character intended for circulation mainly among persons of the classes mentioned above. It is further provided that the section shall not apply to the publication of an advertisement by a local authority or by the governing body of a voluntary hospital. The term "advertisement" in this section includes any notice, circular, label, wrapper, or other document, and any announcement made orally or by any means of producing or transmitting sounds.

The financial memorandum to the Bill states that "it is not possible at present to forecast accurately what the total additional expenditure on account of the new service will be, but on such statistics as are available and on the assumption that existing facilities for diagnosis and treatment remain undiminished it is estimated that when this service is in full operation the additional expenditure will amount to approximately £600,000 a year for England and Wales and £100,000 for Scotland." It is proposed that the moneys to be advanced to the National Radium Trust shall be repayable to the Minister with interest by annuities spread over appropriate periods. The additional staff required by the Ministry of Health and Department of Health for Scotland by reason of the Bill will, it is estimated, cost about £2,500 a year in the earlier stages after the Bill becomes law and somewhat less in later years.

Mr. Chamberlain announced on December 1 that the second reading of the Bill and consideration of the necessary financial resolution would be taken on December 6, but this second reading was subsequently postponed to allow local authorities further time for examining the financial provisions.

Pasteurization of Milk

Professor W. W. Jameson and Professor G. S. Wilson of the London School of Hygiene addressed the Conservative Health and Housing Committee on November 30 on the scientific evidence in support of the pasteurization of milk. At the close of the meeting the chairman (Sir Francis Fremantle) was asked to report the following resolution to the Prime Minister:

> That in view of the consensus of scientific opinion, this committee thinks it desirable that the councils of urban areas with a population of not less than 40,000 should be given the power to enforce pasteurization of all milk supplies.

Register of National Voluntary Service

Announcing on December 1 a decision to compile registers for national voluntary service, Sir JOHN ANDERSON said there would be registers of all volunteers enrolled for the various reserve, auxiliary, and civil defence services, registers of those earmarked as reserves for the different services, and a register of the unallocated reserves. Arrangements were being made for the compilation of separate registers of persons possessing exceptional professional or technical qualifications; many scientific and technical institutions had already taken steps to compile such registers, and these would be available. These registers, with the records already available of men included in a special list of vital occupations, would constitute the National Voluntary Register. If this country became involved in war a complete national register would be necessary, and to ensure completeness it would have to be compiled under compulsory powers. Such a register would not only be of great value in connexion with a scheme of food rationing, but would enable the whole of the national resources both of man-power and woman-power to be marshalled and conserved for a conflict which might be prolonged.

Employment of Medical Refugees

Mr. GARRO JONES, on December 1, asked Dr. Elliot to consider the establishment, in co-operation with local authorities, voluntary organizations, or otherwise, of hospitals and clinics to be staffed by medical and other refugees and placed in areas where specialist and general facilities for treatment of disease are inadequate. Dr. ELLIOT replied that responsibility for health matters was by statute entrusted to local authorities, who had power to provide institutional accommodation. The employment of personnel was at the discretion of the local authorities, and he did not think it would be possible for him to take steps as suggested.

Medical Students' Instruction in Obstetrics

Sir JOSEPH LEECH asked on December 1 whether, to reduce maternal mortality, the Ministry of Health was taking steps to require that a higher standard of gynaecological tuition be given to medical students "so that inexpert midwifery need no longer be permitted by the licensing authorities." Dr. ELLIOT said that the Interim Report of the Departmental Committee

on Maternal Mortality had been transmitted officially to the General Medical Council with special reference to the education of medical students in obstetrics. Since that correspondence the resolutions of the Council in regard to professional education which related to instruction in midwifery, etc., had been revised on November 24, 1932, and on May 29, 1936, with effect from November 1, 1938. The standard both for medical students and for midwives was being steadily raised.

Health Services in Northern Rhodesia.—Mr. MALCOLM MACDONALD announced on November 23 that additional provision for health services would be made in the 1939 Estimates of Northern Rhodesia. A disease survey of the territory was being undertaken, and campaigns initiated against syphilis, yaws, and skin affections. Proposals put forward by Sir Alan Pim and Mr. Milligan for extension of the Northern Rhodesia health services were receiving consideration.

Dental Benefit.—Asked by Mr. DAVID ADAMS on November 24 to take steps to graft on to the health insurance system a scheme of statutory dental benefit under which such treatment would be as freely available as medical benefit, Dr. ELLIOT replied that provision of dental benefit as a statutory benefit available to all insured persons would require an increase in the weekly rates of contribution at present paid by insured persons and their employers. The proposal could only be considered, when the time was opportune, in relation to demands for other major extensions of the national health insurance and contributory pensions schemes. In the meantime dental benefit must remain an additional benefit available only to the members of those approved societies which devoted part of their surplus funds to its provision.

"Iron Lungs."—Sir ROBERT YOUNG asked on December 1 whether the Minister of Health was in a position to increase the number of "iron lungs" in this country. Dr. ELLIOT, in reply, mentioned the offer of Lord Nuffield to supply these appliances gratuitously to all hospitals in the country which required them. He expressed his appreciation of this generous action. Sir FRANCIS FREMANTLE pointed out that a cheaper apparatus for the same purpose was constructed from rubber and other materials.

Tuberculosis in Wales.—The report of the Committee which investigated the problem of tuberculosis in Wales has been received, and will be published as a Parliamentary paper.

Medical News

A meeting of the Harveian Society of London will be held at 26, Portland Place, W.C., to-day (Friday, December 9), at 8.30 p.m., when Sir Alfred Webb-Johnson will deliver his presidential address on "The History of Surgery in London."

Dr. Leonard Colebrook will give a Chadwick Public Lecture on "The Control of Puerperal Fever" on Tuesday, December 13, at 5.30 p.m., at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., with Dame Louise McIlroy in the chair.

The Benjamin Ward Richardson Lecture on "The Hygienic Treatment and Disposal of Offal and By-products in Abattoirs" will be delivered by Mr. John Austin at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W., on Tuesday, December 13, at 5.30 p.m.

The annual dinner of the Medico-Legal Society will be held at the Connaught Rooms, Great Queen Street, Kingsway, W.C., on Friday, December 16, at 7.15 p.m., with the president, the Hon. Mr. Justice Humphreys, in the chair.

A meeting of the Illuminating Engineering Society will be held at the Institution of Mechanical Engineers, Storey's Gate, St. James's Park, S.W., on Tuesday, December 13, at 7 p.m., when Mr. W. D. Wright, D.Sc., will read a paper on "The Response of the Eye to Light in Relation to the Measurement of Subjective Brightness and Contrast."

In our advertisement columns this week the Southern Rhodesian Government Service invites applications for a pathologist for appointment as Director of a Public Health Laboratory in Southern Rhodesia. The salary is £1,000 per annum, rising by annual increments of £50 to £1,250. Applications are also invited by the Board of Control for a Commissioner on the Board's Staff at a salary of £850 per annum, rising to £1,180.

A meeting of the Pharmaceutical Society of Great Britain will be held at 17, Bloomsbury Square, W.C., on Tuesday, December 13, at 8.30 p.m., when Mr. W. G. Templeman will deliver a lecture on "Plant Growth Hormones and their Uses."

A sessional meeting of the Royal Sanitary Institute will be held at Leicester Town Hall on Friday, December 16, at 5 p.m., when discussions will take place on "The Progress of Cremation," to be opened by Dr. E. K. Macdonald, and on "Ministry of Health Model Series IV, Building By-laws (1937): the Problem of Revision of Existing By-laws," to be opened by Mr. Harold Webster.

The annual general meeting of the Jewish Health Organization of Great Britain will be held at 19, Rampart Street, E., on Sunday, December 11, at 3 p.m., when Dr. J. Alison Glover will give an address.

The Lausanne Medical Graduates' Association held a luncheon and meeting on November 24 at the Langham Hotel, London, the president for 1934–8, Dr. D. A. Imrie, being in the chair. There were three toasts: The King; the University of Lausanne and the L.M.G. Association; and Our Guests and Visitors. Dr. F. W. Crossley-Holland replied on behalf of the guests. Dr. H. W. Abbott was elected president for 1938–42, and Dr. C. T. Gasking president-elect for 1942–6. Laudatory remarks and many expressions of gratitude for help given by the hon. secretary, Dr. C. A. H. Franklyn, were made by Drs. Abbott, Bellamy, Gasking, and Imrie. The hon. secretary then presented his report and financial statement, and Dr. Robert Fleming was appointed a vice-president.

The House of the British Medical Association, including the Library, will be closed for the Christmas holiday from 5 p.m. on Friday, December 23, to 9 a.m. on Wednesday, December 28 (Library 10 a.m.). Owing to the holiday the *Journal* for December 24 will go to press on Tuesday, December 20, and all editorial communications and advertisements intended for that issue should reach the Editor and Advertisement Manager respectively by the first post on Monday, December 19, at the latest. Material for the issue of December 31 should reach the Editor or Advertisement Manager by the first post on Friday, December 23.

Sir Milsom Rees is again offering two £100 scholarships at Port Regis Preparatory School to the sons of medical men. Candidates must be under 9 years of age when the examination is held during the first week in March, 1939. Applications should be addressed to the Headmaster, Port Regis, Broadstairs.

From December 17 the address of the Health and Cleanliness Council will be Aldwych House, Aldwych, W.C.2.

Mr. Howard Stevenson, surgeon to the Royal Victoria Hospital, Belfast, was returned unopposed on December 5 as Unionist M.P. for Queen's University in the by-election caused by the death of Sir Robert Johnstone, former President of the British Medical Association.

The Lord Chancellor has added the name of Mr. Gerald S. Hughes, M.B., B.S.Lond., F.R.C.S., to the Commission of the Peace for the City of York.

The Water Examination Department of the Metropolitan Water Board has been transferred to the Board's new laboratories at 177, Rosebery Avenue, E.C.1 (telephone: Terminus 3300), to which address all communications should be sent.

Dr. Patricia H. S. Shaw and Dr. J. E. Outhwaite (Middle Temple) and Dr. T. L. Hughes (Gray's Inn) were called to the Bar on November 17.

Professor Émile Sergent of Paris has been made Commander of the Order of Leopold of Belgium.

EPIDEMIOLOGICAL NOTES

Acute Poliomyelitis

The incidence of poliomyelitis in England and Wales continues to fall, though a slight increase was recorded in London. The chief counties affected were London 7 (Deptford 2; Battersea, Bethnal Green, Camberwell, Greenwich, and Hammersmith 1 each); Glamorgan 6 (Cardiff 4, Swansea 1, Pontardawe 1); Essex 4 (Chelmsford rural 2, Braintree and Bocking 1, Harwich 1); Lancaster 4 (Liverpool 3, Southport 1); Derby 3 (Long Eaton, Ashbourne, and Bakewell 1 each); Southampton 3 (Southampton, Eastleigh, and Hartley Wintney 1 each. There were three cases in Edinburgh.

Enteric Fever

In England and Wales notifications of enteric fever fell from 31 to 21 and in London from 11 to 9, but in Eire an increase from 5 to 10 was recorded. The chief centres affected were London 9 (Shoreditch 5, Hampstead 2, Chelsea and Islington 1 each); Middlesex 3 (Wembley 2, Ruislip-Northwood 1); Anglesey 2 (in Aethwy). Of the 9 typhoid fever cases in Eire 4 were in Tralee, 2 in Waterford, and 1 each in Castletown (Cork), Dublin, and Sligo. One case of paratyphoid fever was notified in Dublin. The Shoreditch outbreak began on November 8, and 1 patient has died. At the time of going to press 2 further cases have been notified in the Borough of Shoreditch, making a total of confirmed cases of 25 in the borough and 5 outside the borough but probably connected with the borough cases.

Survey of Diphtheria in 1938

The provisional data on diphtheria in 1938 furnished to the Health Section of the Secretariat of the League of Nations indicate that diphtheria is on the increase in the U.S.A. and in Europe, with the exception of the Scandinavian countries and in Eastern and South-East Europe. In the U.S.A. and in England and Wales the expected seasonal increase is earlier in its appearance than in 1937. In the former country 19,307 cases were reported in 1938 up to October 8, compared with 16,554 during the corresponding period in 1937, while in the latter comparative figures are 54,490 in 1938 and 48,926 in 1937. In Germany 130,600 cases were reported up to November 8, compared with 123,389 in 1937. In France 14,145 cases were notified during the first nine months of 1938, as compared with 13,322 during the similar period of 1937. Increases were also reported in Belgium, Czecho-Slovakia, Holland, and Italy., The decline of diphtheria in 1938 compared with 1937 amounted to 50 per cent. in Sweden, 34 per cent. in Denmark and Finland, 20 to 23 per cent. in Hungary, Yugoslavia, and Bulgaria, and 14 per cent. in Poland.

Typhus in Morocco

The epidemic of typhus in Morocco which started in October, 1937, to which reference has been made at intervals in these notes, has not yet abated despite the measures taken to control the disease. It is difficult to obtain exact figures of incidence, but unofficial estimates put the number at 30,000 cases with 4,500 deaths among natives. Official figures are available for Marrakesh and district; the latest report puts the number as 4,215 cases with 474 deaths among natives and 174 cases with 50 deaths among European residents. Extensive use was made of the Blanc vaccine in prophylaxis: immunity was conferred on some 85 per cent. of persons inoculated, while in the remainder the majority had the disease in a mild form. Those who had an unmitigated attack did not establish foci of infection in communities which had been partially immunized. Areas in which Blanc vaccination had been carried out in 1925 remained free from the disease. Although no fatalities were recorded, the vaccine produces severe reactions, especially in Europeans. Weigl preparation was used for vaccination of a few private European residents, but no conclusive evidence is available of the degree of immunity conferred.

Quarterly Returns of Births and Deaths

ENGLAND AND WALES

Births.—In the third quarter (ended September 30) of 1938, 158,228 live births were registered, or 362 less than the number recorded in the corresponding quarter of 1937, corresponding to an annual rate of 15.3 per 1,000 of the estimated mid-year population of 1937. Though the number registered is less than that for 1937 it is higher by over 5,000 than the average figure for the third quarters of the preceding five years. Of the total births 6,471 (4.09 per cent.) were illegitimate, 132 in excess of the figure for 1937: 6,033 stillbirths were recorded (3.7 per cent. of the total births registered), 33 more than in the third quarter of 1937.

Deaths.—Deaths at 102,602 were 16,575 less than in the preceding quarter but 2,301 more than in the corresponding period of 1937. Infant mortality was 41 per 1,000 registered live births: this rate was 6 per 1,000 below the average of the ten preceding third quarters. The highest death rates from influenza, 0.13, were recorded in Blackpool, Dudley (Lincoln), and Stretford, and in Stockton-on-Tees 0.12. A death rate of 0.79 from diphtheria was recorded at South Shields, where the disease was epidemic during 1937. References to the prevalence and severity of diphtheria in South Shields and the measures undertaken to combat it have been referred to previously in these notes. Other high deaths from diphtheria were recorded in Chester 0.36, St. Helens 0.30, Barking 0.26, Stanley (Durham) 0.23, and Barnsley 0.22. Death rates from measles were 0.07 in Blackburn, Kingston-upon-Hull, Stoke-on-Trent, and Swindon, and 0.06 in Barrow-in-Furness and Stockton-on-Tees. Higher rates were recorded for whooping-cough: 0.18 in Tynemouth, 0.12 in Bath, and 0.09 in Kingston-upon-Hull. The highest death rates for diarrhoea and enteritis among children under 2 years of age were in Mitcham 34.5, Portsmouth 24.5, Heston and Isleworth 23.9, Brentford and Chiswick 21.7, and Oxford 20.1. The natural increase of population was 55,626, compared with increases of 55,432, 55,661, and 58,289 in the corresponding quarters of 1935, 1936, and 1937 respectively.

SCOTLAND

Births.—At 21,417 births were 2,582 fewer than in the preceding quarter, the rate 17.0 per 1,000 population being 2.3 below that recorded for that quarter and 0.2 below the average of the preceding five years. Of the total births 6.3 per cent. were illegitimate, 0.1 below that for the immediately preceding quarter and 0.3 below the last five years' average for the third quarter of the year.

Deaths.—Deaths numbered 13,804 (11.0 per 1,000 population), or 1,800 fewer than in the previous quarter, while the rate is 1.6 less. The rate is, however, 0.2 above the average for this quarter of the last five years. Deaths of children under 1 year numbered 1,232, equivalent to an infant mortality rate of 5.8 per 1,000 registered live births: the rate is 7 less than in the previous quarter and 2 less than the five-year average for this quarter. The rates for legitimate and illegitimate children were 56 and 81 per 1,000 respectively. The principal epidemic diseases contributed 307, or 2.2 per cent. of all the deaths registered during the quarter: of these, 78 were from diphtheria, 59 from influenza, 58 from whooping-cough, 24 from cerebrospinal fever, and 18 each from scarlet fever and measles. The death rate from this group of diseases is 8 less than the five-year average for this quarter: from measles 3 less, from scarlet fever and whooping-cough 2 less, from diphtheria 1 less, from cerebrospinal fever the same, and from influenza 1 more.

In the United Kingdom and Eire 200,875 births and 128,823 deaths were registered during the quarter, showing an increase of population, owing to excess of births over deaths, of 72,052.

No. 47

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended November 26, 1938.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (*a*) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns (124 in 1937) in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns (9 in 1937) in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1938					1937 (Corresponding Week)					1929-37 (Median Value Corresponding Weeks)	
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)	(a)	(b)
Cerebrospinal fever	19	6	11	2	—	22	5	5	2	—		
Deaths		1	1				2	—				
Diphtheria	1,535	181	272	54	30	1,830	234	259	66	52	1,461	234
Deaths	31	4	6	5	—	53	6	6	3	—		
Dysentery	73	7	31	—	—	351	91	25	4	—		
Deaths				—	—				—	—		
Encephalitis lethargica, acute	3	—	—	—	—	4	—	—	—	—		
Deaths		2					3					
Enteric (typhoid and paratyphoid) fever	21	9	1	10	1	151	8	7	26	1	33	
Deaths	1	—	—	—	—	8	1	—	—	1		
Erysipelas			79	4	4			108	10	3		
Deaths		2					—					
Infective enteritis or diarrhoea under 2 years												
Deaths	37	11	8	6	1	46	9	14	6	4		
Measles		21	14					337				
Deaths	3	—	—	—	—	18	—	3	1	3		
Ophthalmia neonatorum	87	10	38		—	86	8	22		1		
Deaths												
Pneumonia, influenzal‡	659	71	7	1	13	950	96	22	—	3	1,025	96
Deaths (from influenza)	28	4	5	1	5	52	10	12	—	2		
Pneumonia, primary			365	7				468	8			
Deaths		13		15	6		19		11	12		
Polio-encephalitis, acute	3	3				3	—					
Deaths		—					—					
Poliomyelitis, acute	39	7	3	—	—	12	1	—	—	—		
Deaths		—										
Puerperal fever	5*	5	19	2	—	9*	9	21	—	—		
Deaths		1†					1†					
Puerperal pyrexia	150	17	19		—	184	25	8		—		
Deaths												
Relapsing fever	1	—			—	—	—	—		—		
Deaths												
Scarlet fever	1,969	175	324	62	76	2,715	207	632	97	130	2,717	354
Deaths	1	—	2	1	—	6	—	1	1	—		
Small-pox	3	—	—		—	—	—	—		—		
Deaths		—		—	—		—		—	—		
Typhus fever	—	—	—	—	—	—	—	—	—	—		
Deaths				—	—				—	—		
Whooping-cough		169	298		15			51		23		
Deaths	7	1	5	—	—	21	7	—	—	4		
Deaths (0-1 year)	291	59	68	26	18	376	70	105	34	18		
Infant mortality rate (per 1,000 live births)	48	48				63	58					
Deaths (excluding stillbirths)	4,291	824	609	169	151	5,404	1,119	723	183	147		
Annual death rate (per 1,000 persons living)	10.5	10.5	12.4	11.4	13.4	13.3	14.1	14.8	12.5	13.0		
Live births	5,789	1,145	809	321	201	5,776	1,118	830	277	183		
Annual rate per 1,000 persons living	14.2	14.6	16.5	21.7	17.8	14.2	14.1	17.0	18.9	16.2		
Stillbirths	256	38				255	43					
Rate per 1,000 total births (including stillborn)	42	32				42	37					

* After October 1, 1937, puerperal fever was made notifiable only in the administrative county of London.

† Death from puerperal sepsis.

‡ Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS.—All communications should be addressed to the Advertisement Manager (office hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and communications with reference to subscriptions should be addressed to the Secretary, B.M.A. House.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111.

The TELEGRAPHIC ADDRESSES are

EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*

SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone 24361 Edinburgh), and of the Office of the Cumann Doctúirí na h-Éireann (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin;* telephone 62550 Dublin.)

QUERIES AND ANSWERS

Painful Micturition

"G. P." writes: I should be obliged for information as to dietetic and medicinal treatment in a case in which there is smarting on micturition, especially at night. The patient is aged 71 and has an enlarged prostate and some nasal sepsis. The urine is loaded with uric acid and oxalates.

Case for Diagnosis

Mr. C. A. HUTCHINSON, F.R.C.S.Ed. (Bath), in reply to Dr. E. S. Hawkes (November 19, p. 1070), writes: In addition to the dental investigation suggested by "Nemo" (November 26, p. 1126), I would like to stress the need for thorough investigation of the paranasal sinuses. By this I do not mean the more or less cursory examination by anterior and posterior rhinoscopy, with possibly transillumination, so frequently considered sufficient to give the sinuses a "clean bill of health," but careful rhinoscopy by a rhinologist, and on the discovery of any suspicious signs, suction lavage of the sinuses with bacterial investigation of the sinus washings. The facts that the patient looks ill, has extreme lassitude, and that there is a definite periodicity in the pyrexial attacks suggest the strong possibility of a "latent" chronic sinusitis, which ordinary methods of investigation would fail to reveal; whereas in all probability fuller investigation along the lines suggested above would yield instructive and, I hope, definitely helpful findings.

Condensation Water from Theatre Skylight

Dr. A. A. MASSER (Penistone, near Sheffield) writes: In reply to Dr. E. S. Hemsted's inquiry (December 3, p. 1188) for a remedy against water condensation on windows, I suggest that he apply to the glass daily the "antidimming outfit" as supplied with the Special Service Respirator. This is spread uniformly with a cloth over the glass and will last a whole day, and prevent any dimming by condensation on the windows. The same antidimming substance can be obtained from any opticians.

Dr. CONSTANCE OTTLEY (Hove) also writes: I would suggest that the following contrivance would meet the case: a sheet of glass, slightly larger than the skylight, is fixed (perhaps suspended by chains) a short distance below the skylight and slanted slightly from the horizontal in such a way that any water condensed on the under side of the glass or dropping from the skylight on to its upper side can run off harmlessly and drop on the floor beyond the operating table.

LETTERS, NOTES, ETC.

Medical Register: Office Edition

The Registrar of the General Medical Council informs us that orders for the Office Edition of the *Medical Register*, 1939, published by the Council at the special price of 10s. a copy, post free, must be received, with a remittance, at the office of the Council not later than December 31, 1938. This edition differs from the ordinary edition to the extent that it does not contain reprints of the Medical and Dentists Acts and other preliminary matter, and is printed on more inexpensive paper and bound in boards. It includes, however, the same entries relating to registered medical practitioners as are included in the ordinary edition, and is therefore equally serviceable to public authorities and others who find it necessary to ascertain whether particular persons are registered medical practitioners or not. The Council also prepares monthly lists of names added to, and removed from, the *Register*, and particulars of the terms and conditions upon which copies of these lists may be made available can be obtained on application to the office of the Council, 44, Hallam Street, Portland Place, London, W.1.

A Warning

The Secretary of the Essex Public Medical Service writes: The other evening I had a visitor who introduced himself as "Dr. Wilson of Rochford"; he had no time to stay, in fact a taxi was waiting, but he would like to see me on the following day to talk over several matters. He had to go to St. George's Hospital to be present at operations on two of his patients, and as he would probably have to stay in town over the night, and had come away with little cash, he would be obliged if I would lend him a pound or two. That evening I 'phoned up Dr. Wilson of Rochford (who had not been out of the place) and St. George's (where he was unknown). I informed the police, and later a detective from Scotland Yard brought a number of photos, one of which I recognized as that of "Dr. Wilson"; the photo had been taken in prison. This man, it appears, is a clever and plausible rogue who has victimized many doctors and medical organizations. He is wanted on many charges in London and in provincial towns. He always poses as Dr. Somebody, is always on the way to an urgent case, and usually has a taxi waiting. He plays his part well. He is 70 years of age; jolly manner; short and thick-set; full, flabby face with reddish complexion; bald, with fringe of whitish hair above the ears.

Quick Sales

Dr. J. S. LOUGHRIDGE (Belfast) writes: It may interest your readers to know how the representatives of a certain well-known encyclopaedia are making "quick" sales. A girl calls and asks if one is willing to receive a copy of their encyclopaedia without obligation: she explains that the publishers are "giving away" a number of copies to a few carefully selected people as an advertisement. The obligation, after acceptance, amounts to £29 10s.

Calendars and Diaries

The 1939 diaries and calendars of Messrs. John Walker and Co. Ltd. (5 and 6, Warwick Lane, E.C.4) are well up to the standard of previous years, both in appearance and in usefulness. The desk diaries, with spaces for the half-hour and quarter-hour appointments, are especially suitable for the busy medical practitioner. Pocket diaries can be obtained with one page (or less) for every day of the year, according to individual requirements. The bindings leave nothing to be desired, being both attractive and serviceable. The prices range from 1s. upwards.

The Dental Manufacturing Co. Ltd. (97, Great Portland Street, W.1) have issued their diary of appointments for 1939, containing space for half-hourly appointments, as well as several pages of information of use to dental practitioners. The separate address book, clipped inside the back cover, should be much appreciated. The price of the plain edition of the appointments book is 6s. 6d. (postage 6d. extra).

Hormone Therapy

We have just received from Organon Laboratories, 77, Newman Street, London, W.1, a booklet describing the standardized biological products prepared by this firm, and entitled *Hormone Therapy*. Copies of these will be sent to practitioners on application.